The Communicator

March—April 2024

The Bi-monthly Journal of Surrey Amateur Radio Communications

PUBLICATION CONTACTS

COMMUNICATOR & BLOG EDITOR John Schouten VE7TI
communicator at ve7sar.net

SARC TELEPHONE 604-657-8753

CORRESPONDENCE 14689 - 72A Ave,
Surrey, BC V3S 9L8
SARC at ve7sar.net

CONTRIBUTING EDITORS John Brodie VA7XB
Kevin McQuiggin VE7ZD/KN7Q

The Communicator is a free electronic periodical published by Surrey Amateur Radio Communications in Surrey, B.C., Canada. All rights are reserved.

Our article reprint policy is on page 113

Issues appear bi-monthly, on odd-numbered months, for area Amateur Radio operators and beyond, to enhance the exchange of information and to promote ham radio activity.

Contributions of articles and photos are welcome.

During non-publication months we encourage you to visit the Digital Communicator at **ve7sar.blogspot.ca**, which includes recent news, past issues of ***The Communicator***, our history, photos, videos and other information.

To subscribe, unsubscribe or change your address for e-mail delivery of this electronic journal, notify **communicator @ ve7sar.net**

If you find ***The Communicator*** worthwhile, regular readers who are not SARC members are invited to contribute a donation towards our Field Day fund via PayPal.

SARC maintains a website at **www.ve7sar.net**

DEPARTMENTS

The rest of the story 4

A GOTA anniversary 8

News you can lose —Ham humour 13

Radio ramblings 15

Solder smoke 28

Grounding 32

Projects 36

Daniel's workbench 48

VOACAP 61

RAC news 70

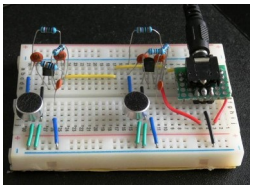
Issue columnists 73 - 86

Back to basics 88

SARC & SEPAR news 93

QRT 116

IN THIS ISSUE



Daniel Romila is back with several projects and information on a variety of electronics.

An urge to create some solder smoke? This month a couple of articles to warm your iron on.

In this issue Kevin looks for a good cup of coffee and brings us up to date with Radio Ramblings.

...and so much more!

QSK?

Do you have a photo or bit of Ham news to share? An Interesting link?

Something to sell or something you are looking for?
*eMail it to **communicator at ve7sar.net** for inclusion in this publication.*

Its nice to see the short days of winter fading and the promising weather of spring ahead. We have much planned for the next few months.

We are hosting several linked antenna workshops based on a 5-band HF antenna project featured in The Communicator last fall. The antenna has proven to be a winner in both performance and cost and our members are anxious to build one of their own, whether for use at home, RV'ing, or on a GOTA/POTA activation.

We also just completed a number of winter workshops. Held indoors because of the often wet West Coast weather, we have introduced members to Getting Started in HF, our course participants to Building an Antenna and our Basic course grads to Getting On The Air. The popularity of our Saturday sessions is such that we attract both new and experienced hams and members, often resulting in waiting lists.

We now have requests for other workshops including offering a Basic Electronics series that would introduce participants to breadboarding circuits and putting into practice use some of the circuit theory they learn in our Basic Amateur Radio course.

And a local high school has received permission from the School Board to offer a summer school credit course which will lead to successful students obtaining their Amateur Radio certificate. SARC and SEPAR are both working closely with the instructor, himself a recent graduate of our course.

Enjoy this issue.

73,

~ John VE7TI, Editor
communicator@ve7sar.net

This Month's Cover…

It has been one year since SARC launched the 'Get On The Air' (GOTA) project. The results have been truly amazing. We have elmered many of our Basic course graduates and encouraged them to become involved in SARC and SEPAR activities. Many are now productive members of one or both organizations. Happy Anniversary GOTA!

"It is not the class of licence the Amateur holds but the class of the Amateur that holds the licence." - *Daren 2E0LXY*

On the Web

ve7sar.net

Between Communicators, watch your e-mail for news, announcements of Amateur Radio events, monthly meetings and training opportunities.

Click the links below to follow our presence on the web and social media:

SARC Blog
ve7sar.blogspot.ca

Twitter
@ve7sar

FaceBook
SurreyAmateurRadio

Our YouTube Channel
SurreyARC

SARC Photo Albums
Web Albums
or
tinyurl.com/SARCphoto

The Rest Of The Story…

Otto Eppers

The high-diving QSL cartoonist

Otto Eppers

Otto Eppers was an American cartoonist and illustrator, known for his adventurous spirit and artistic ability. Born in Brooklyn, New York City, Eppers lived there as a boy with his mother and sister. He was the son of a lithographer and exhibited talent as a nascent artist, enjoying creating caricatures.

The Brooklyn Bridge Stunt

In 1910, at the age of 17, Eppers jumped off the Brooklyn Bridge and emerged from the East River unscathed. But things were not as planned. The New York City police had been tipped off the day before about a jump attempt. They positioned officers on bicycles along the Manhattan's roadway to thwart any would-be jumpers. Otto and his entourage quickly recognized the heightened police presence and they decided to continue over to the island of

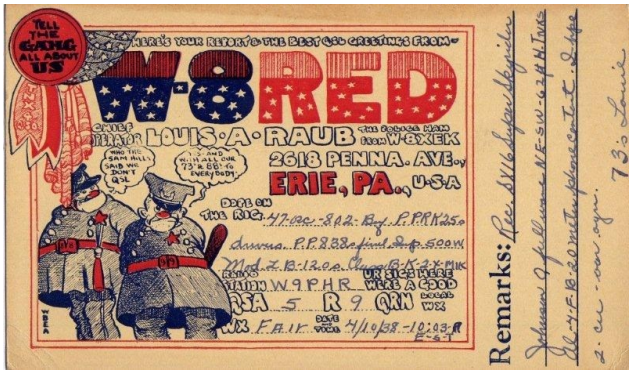
Manhattan and recross back to Brooklyn via the bridge of the same name.

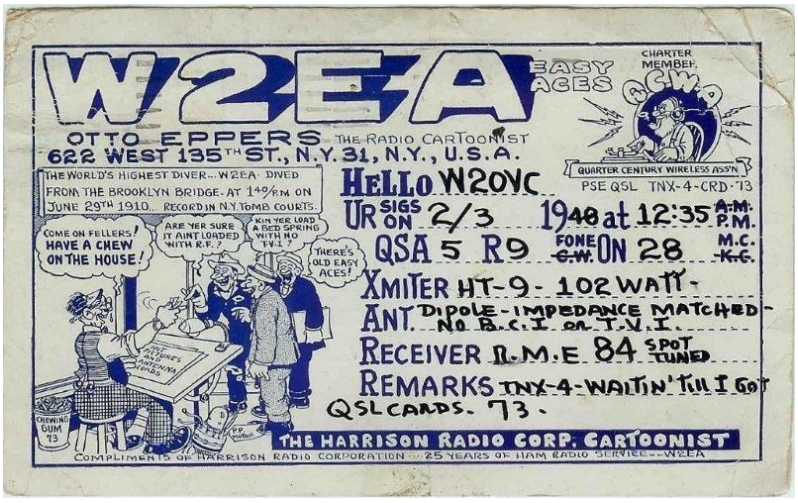
As the auto reached mid span of the Brooklyn Bridge, Otto ordered the driver to stop the vehicle so he could shed his overcoat, trousers and boots. But the stalled auto caught the attention of Patrolman Scheffmeyer, stationed on the Brooklyn-bound lanes. Otto scrambled through the latticework of the superstructure with Patrolman Scheffmeyer in hot pursuit.

The river flowed about 135 feet below, the equivalent of dropping off a 14 story building. Still fully dressed, Otto raised his hands over his head and hurriedly pushed off the steel structure. His intention was to dive in one long, sweeping arc. That didn't happen. "But somehow I started to twist, and then I couldn't stop" he later told reporters. Spectators lining the river's edge described him turning three or four pinwheels before he entered the water in a sitting position.

"I wasn't a bit scared until I jumped, but I don't remember anything after I hit until I came up." He remained submerged for some 15 seconds after impact.

When he finally surfaced he was quite dazed and began to paddle lazily over to the river tug Florence, about 50 yards distant. "I could have swum to shore," he later boasted but also admitted "but I wasn't feeling very spry."





The crewmen fished him out of the water and his first words were "Gee, but I hit hard." This was quickly followed with "Say, who's got the makings of a cigarette?" Otto's clothing was in tatters. In his coat pocket was a rough sketch of his plunge signed proudly, "That Bridge Jumper, O. Eppers."

The tug made for the Brooklyn shore where the awaiting police were quick to arrest him. The charge - attempted suicide.

He was taken to St Gregory's Hospital and was examined by Dr Dietrich who found that Otto had a few bruises on his back but was otherwise uninjured. Otto was then presented to Magistrate Appelton for his preliminary court hearing. When Appelton heard the charge he smiled and Otto couldn't restrain a laugh. Otto was asked why he had performed such a foolhardy feat. He replied: "It hasn't done me any harm. I wanted to become a professional high diver and I want a reputation." He continued, "I wasn't a bit nervous except when I saw so many policemen about. My clothes didn't bother me at all, but I seemed to be half an hour in the air, and believe me that I went right down to the bottom."

Addressing no one in particular Appelton said "Well, he seems very much alive, doesn't he?" The charges were dropped due to lack of evidence. Otto walked out of the

courtroom but received a stern upbraiding from his mother and sister.

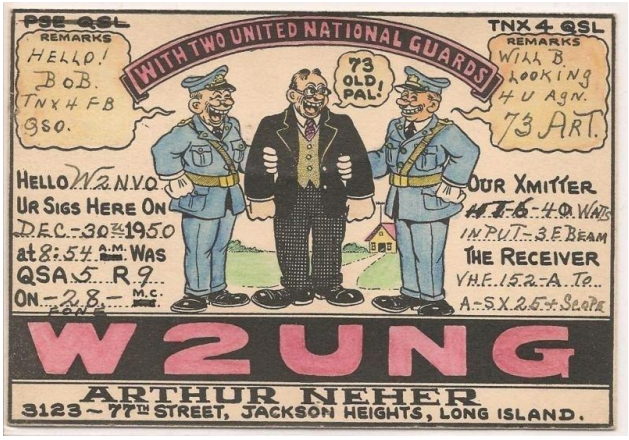
This stunt was part of a scheme with a Brooklyn clothier, Harry Dressler. If Eppers could jump off one of the bridges and survive, Dressler would pay him $250 and provide him with two brand new suits of his choosing. This publicity stunt was intended to jump-start his career and earn him money for lessons.

Contributions to Amateur Radio

Otto next left New York, enlisted in the Army and was stationed in Little Silver, New Jersey. His duties included being a motorcycle dispatch rider for the Signal Operation and Engineer's Division. During his enlistment, Otto cultivated a greater interest in cartoon drawing. He furnished "very creditable cartoons" for the base's newspaper. He also became adept in early radio operation. Both of these interests would have major influences on his life and career.

Eppers was active from the 1920s to 1950s and contributed characters to QSL cards for ham radio operators. He had ties with the American Radio Relay League (ARRL) in the 1923 era and was a staff artist. His old curmudgeon characters were enjoyed by the faithful, and many of Manhattan's Radio Row stores used Otto for their sales cartoon advertisements. His QSL cards are valuable collector's items today and are treasured by many of his admirers.

In 1947 he became one the original members of the Quarter Century Wireless Association. He designed their logo, which continues in use today. Ever restless, Otto focused his interest in radio to open a radio repair business with a partner in Clearfield.



Eppers was a resident of Clearfield, Pennsylvania, where he was active in the ham radio community with the callsigns W8EA and W2EA. He was a Charter member of the Quarter Century Wireless Association (QCWA) and engineered the QCWA Logo, making some modifications and adding sparks to develop the unforgettable logo.

Later Life and Legacy

Eppers later worked for the Harry "A" Chesler studio and for Timely Comics. His contributions as a penciler and inker include stories for features or in series such as "Scottie", "Happy Landings", "IMA Slooth", "Punch and Cutey", "Gay Comics", and "Inspector Fumble".

In the vibrant world of amateur radio, Otto Eppers stands out as a pioneer and artist, leaving an indelible mark on the community through his unique and imaginative QSL card creations. The QSL card, traditionally a simple confirmation of radio contacts, takes on a whole new dimension in the hands of Otto Eppers, who transforms these cards into captivating works of art. In this article, we explore the life, passion, and contributions of Otto Eppers to the world of amateur radio and QSL card design.

Otto Eppers passed away on December 22, 1955, at the age of 62. His work lives on today, and his art is cherished by many.

~

RAC "Get on the Air on World Amateur Radio Day" Special Event

Every year on April 18, Radio Amateurs worldwide take to the airwaves in celebration of Amateur Radio and to commemorate the formation of the International Amateur Radio Union (IARU) on April 18, 1925.

On **Thursday, April 18, 2024** (0000Z to 2359Z), Radio Amateurs of Canada (RAC) is organizing a special on-air event to celebrate World Amateur Radio Day.

The "Get on the Air on World Amateur Radio Day" special event is designed to encourage as many Amateurs as possible to get on the air and contact as many RAC stations as possible.

RAC official stations will operate across Canada from 0000Z to 2359Z on April 18.

The RAC official station call signs are: VA2RAC, VA3RAC, VE1RAC, VE4RAC, VE5RAC, VE6RAC, VE7RAC, VE8RAC, VE9RAC, VO1RAC, VO2RAC, VY0RAC, VY1RAC and VY2RAC.

Those contacting one or more of these stations will be eligible for a special commemorative certificate noting their participation in RAC's Get on the Air on World Amateur Radio Day Event.

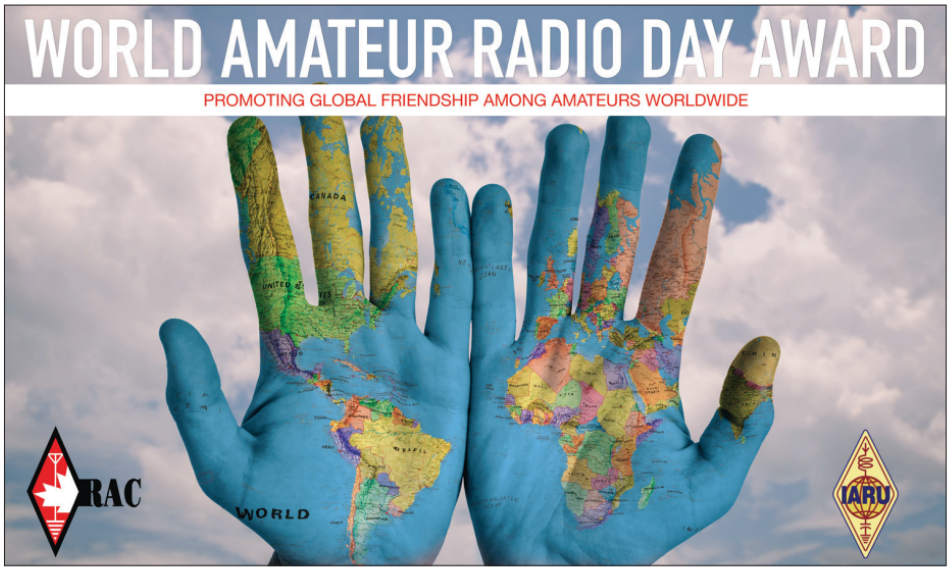
Participants simply need to complete one or more contacts, on any band and mode, with RAC official stations to earn their certificates.

No logs need to be submitted; simply check back on the RAC website when instructed and enter your call sign to download your certificate.

Thank you for your continuing support and understanding during these difficult times. As with many of our Amateur Radio activities, overcoming challenges is a great way to learn. Please take care of yourself and your loved ones, stay safe and have fun while celebrating World Amateur Radio Day.

Please watch the RAC website for updates: https://www.rac.ca/operating/world-amateur-radio-day-april-18/

Phil McBride, VA3QR
RAC President and Chair



IARU President Tim Ellam, VE6SH, provided the following message:

"World Amateur Radio Day is the day when Member Societies of the International Amateur Radio Union can show our capabilities to the public and enjoy global friendship with other Amateurs worldwide.

For 2024, the IARU is very pleased to adopt the theme of : 'A Century of Connections: Celebrating 100 years of Amateur Radio Innovation, Community and Advocacy'.

Since its founding in Paris, France in 1925, the IARU has worked tirelessly to promote innovation in Amateur Radio and to encourage the growth of the Amateur Radio Service in communities throughout the world.

The IARU has represented the Amateur Services at international and regional regulatory bodies by relying on our volunteers who come from many countries and communities. The IARU has been a sector member of the International Telecommunication Union since 1932 and the work of our volunteers has continued since that date with unmatched success; as was highlighted with the accomplishments at the World Radiocommunication Conference (WRC-23) in Dubai.

Leading up to our centenary year, we should take time to reflect on the remarkable achievements of Radio Amateurs over the last 100 years. While the Amateur Services have been in operation for over a century, 1924 was the first year that intercontinental Amateur communication became more or less commonplace. Since that time Radio Amateurs have made unparalleled advances in technology related to the Amateur Services that play a critical role today in sustaining worldwide communications and allow us to respond to global emergencies.

World Amateur Radio Day is an opportunity to reflect on our achievements since 1924. We should celebrate our diverse community and the advances and innovations we have made as we look forward to celebrating the IARU centenary next year."

World Amateur Radio Day (Thursday, April 18) is the day for all of Amateur Radio to celebrate and tell the world about the science we can help teach, the community service we can provide and the fun we have. Groups should promote their WARD activity on social media by using the hashtag #WorldAmateurRadioDay on Twitter and Facebook. The IARU will list all WARD activities on its webpage. To have your WARD activity listed, please send an email to IARU Secretary Joel Harrison, W5ZN.

We hope you will join in the fun and education that is World Amateur Radio Day!

https://www.iaru.org/on-the-air/world-amateur-radio-day/

The GOTA Project:

First anniversary

by LARRY BLOOM VE7LXB

Larry Bloom, VE7LXB is a retired high school teacher who passed his Amateur Radio Basic with Honours in late spring 2022. Larry is the SARC New Ham Coordinator as well as a Director with SARC and is passionate about helping new hams get started in Amateur Radio.

March 2024 marks the first anniversary of our **G**et **O**n **T**he **A**ir initiative. We created this program because we believe that many new hams never get beyond their certification and a cheap handheld radio. In fact, many never make a single contact. Our GOTA Program is designed to help new hams work through these obstacles.

Our GOTA initiative includes:

- A seven week online Amateur Radio Certification Course.
- A GOTA Workshop for Amateur Radio Certification graduates.
- A Weekly GOTA Net for new hams.
- Follow-up assistance for the newbies.
- Monthly DIY Workshops.
- Online Amateur Radio Certification Course

We offer this online course quarterly and have graduated students ages 8-85 from across Canada and beyond. Help is available to students on-line or in-person on Saturday mornings at our Operations and Training Centre (OTC) in Surrey, BC.

The GOTA Workshop

At the heart of our initiative is a free GOTA Workshop for class graduates who have passed their exams and received their call signs. We recognize that programming HTs can be daunting and the manuals that accompany the radios can be confusing. To help alleviate this issue, we offer to program their radios at the GOTA Workshop with local repeater and simplex frequencies.

The GOTA Workshop also covers:

- The important parts of a radio.
- Transceiver and antenna purchasing options.
- VFO vs memory channels.

- The basics of repeater and simplex transmissions.
- How to make contacts.
- On-air jargon and etiquette.
- The importance of Elmers and how to find one.
- An overview of our SEPAR Emergency Preparedness group.

The sessions conclude with one-to-one contacts through our club repeater. This helps participants overcome mic fright they may be experiencing. Besides, there's nothing like the excitement of that first contact!

GOTA Net

Our GOTA Net for new and unseasoned hams takes place Thursday evenings at 8pm PST. John VE7TI is our resident Elmer and yours truly acts as Net Control. The purpose of the Net is to encourage new hams to get on the air. The Net also provides them with a roundtable where they can update us on their progress as well as get assistance from our Elmers.

The Net consists of:

Early Bird check-ins, schmooze session, and signal checks one half-hour before the Net begins.

- Announcements from the Club Executive.
- GOTA and Elmer check-ins.
- A Roundtable discussion.
- Wrap-up.

Net participation has grown steadily over the past year. Initially we had 6-12 participants checking in but that has grown to as many as two dozen on a given night. Over the past year, other Elmers have joined the Net offering their support. In late fall of 2023, we introduced a new format. The first

Thursday of the month an Elmer introduces a topic for the roundtable. Topics have included DMR Radio, Grounding Basics, Coax Purchasing Decisions, How Weather Affects Antennas, Ground Planes and Counterpoises, and The QSL System. This format has been very well received by the group.

Follow Up Assistance

This includes regular emails with topics of interest, inexpensive antenna upgrade offers, and HF training at the OTC.

Monthly Workshops

We offer monthly DIY workshops that were initially targeted towards GOTAs. However, about half of those registered are long-time club members.

Workshops offered thus far include:

- A Roll-Up J-Pole Antenna Workshop for our Ham Class students.
- Printed Circuit Board Soldering.
- An intro to HF.
- Constructing a 5 Band Segmented Dipole.
- POTA and Logging.

These workshops fill quickly and most require an additional afternoon session. We hope to offer an Intro to Electronics Workshop for fall 2024.

Accomplishments

Measuring the success of our GOTA program is subjective and anecdotal. However, two events in 2023 stand out for me as major accomplishments: Rookie Roundup and Field Day.

Rookie Roundup

Our first GOTA HF contest was the American Radio Relay League (ARRL) Rookie Roundup. The ARRL is a national organization of amateur radio operators in the U.S.A. To qualify as a Rookie Contestant, operators were limited to a maximum of 3 years ham experience. The contest was held Sunday, April 16th and our group competed as Multi-Op using the club call VE7SAR. Although propagation conditions were not optimal, we made 38 QSO's over 16 states and 2 provinces. Our final score was 1026 including multipliers. Not too shabby for our first time competing, but the best was yet to come.

Field Day

With the Rookie Roundup under our belt, our newbies were anxious to try Field Day in the GOTA category. Although our club GOTA participation has been minimal in past years, last year SARC decided to give GOTA priority given the bonus point potential. In no time we had a motivated group of newbies backed by the full support of our club directors.

Beginning at 11 am PST, our GOTAs began transmitting out of the SEPAR trailer using an IC-7610 graciously lent to us by iCom. For the next 24 hours, we ran, we pounced, and we spun the dial on the 15, 20, 40, and 80m bands, utilizing our 110' "Bigfoot" mobile tower with a TH-7 Tribander. Given their lack of HF experience, we had one newbie transmitting while another logged. After an hour, the operator took a break, the logger took the operator's place, and another GOTA sat in the logging chair.

And so, we rotated through. I was amazed at how quickly the newbies picked things up. Our biggest issue was convincing them to relinquish the mic!

Exhaustion set in by 11 am Sunday morning, but we knew that we had accomplished something special. Our combined club score in F Class put us 1st in Canada and 3rd overall.

Who Are the GOTAs?

When we designed our Program, we assumed that GOTAs had a limited electronics background. We were wrong. In fact, many do have a background in electronics, IT, or engineering. However, we were correct in predicting that most newbies are nervous about pressing the PTT button.

Demographically, most GOTAs are retired or semi-retired and about 10% are women. Disappointingly, few are in their teens or early twenties. Many take the course as backcountry, hunting, or prepping enthusiasts - others have an interest in electronics and consider Amateur Radio an option worth exploring. More than a few have family members who are hams. We've found that most are completely unaware of the many Amateur Radio avenues available to hams e.g., contesting, digital modes, POTA, and QRP.

Conclusion

Overall, interest in our GOTA program has been strong, exceeding our most optimistic predictions. Momentum is building as newbies have been referred to us by seasoned operators and other local clubs. The fact that our club is active and growing seems to belie the assumption that ham radio is a dying hobby. For clubs considering a GOTA Initiative, the critical components appear to be:

- A change agent(s), someone who passionately believes in helping new hams get started in the hobby.
- A Club Executive that is willing to buy in.
- A pragmatic approach combined with outside the box thinking.

A final thought. Amateur Radio is many hobbies within a larger hobby. Since it's almost impossible to become an 'expert' in all these sub-hobbies aren't all hams GOTAs as they continue to explore the many ham radio rabbit holes?

GOTAs

Adam VE7ZAL, Lesley VE7CMI, Dale VE7LWT, Dave VA7JWD, Wayne VE7WVX, Will VE7WPA, Katrina VA7WBT, Bill VE7WDO, Leandro VE7LSI, Stephen VE7LWD, Danielle VA7LKD, Darryl VA7CQD, U.B. VE7UBZ, Rob VA7ROB, Bruce VA7FNW, Paul VA7PBC, Ernie VE7ODK, Warren VE7WLM, Deway VA7DTY, Rob VA7RLS, Jason VE7XWT, Sean VE7TVS, Jack VE7TVJ, Danielle VA7LKD, Geoff VA7GIB, Ray VA7ASU, Randy VA7TGO, Mike VA7OMD, Derek VE7VPG, Rob VA7RWE, Brad VA7BPG, Harry VA7ELj, Ashley VA7OAM, Raymond VA7ASU, Hermes VE7NLK, Rob VE7DSB, Gerry VE7CYV, Gary VA7GHD (Apologies to those I've missed)

~ 73, Larry Bloom VE7LXB
Director & New Ham Coordinator
Surrey Amateur Radio Communications

If you would like more information on the SARC GOTA project, our Amateur Radio course, or would like to be added to our GOTA mailing list, feel free to drop us a line at gota@ve7sar.net or check out our blog ve7rsc.blogspot.com. Our GOTA Net takes place every Thursday evening at 8pm PST. VE7RSC North 147.360MHz+ tone: 110.9Hz IRLP node 1736 Our Echolink node number for VE7RSC-VHF: 496228. You're invited to drop in.

Page 12

News You Can't Lose

Royal Canadian Air Force Centennial

April 2024 special event stations

By: JOHN SCHOUTEN VE7TI

April 2024 marks 100 years of service for the Royal Canadian Air Force as a distinct military element. The Centennial milestone places the RCAF in a unique position to honour its distinct heritage; recognize its tremendous people today; and generate excitement for its bright future. Canada's Air Force will be showcased in a past, present and future context, with a focus on highlighting contributions to national safety and security, international peace and global stability.

The RCAF 2024 Team are curating a year-long program that includes International, National and Regional events, such as the RCAF Run, RCAF Gala, Legends of the Sky, and allied air demonstration team participation in Air Shows across Canada, as well as activities to Inspire future generations of Canadians through STEM initiatives.

Amateur Radio operators across Canada are invited to participate in this month-long event and to make contacts around the world on all amateur radio bands and modes with the special event RCAF callsigns that have been granted to provincial amateur radio groups to commemorate the event. In BC, Surrey Amateur Radio Communications is the sponsor for VE7RCAF. This callsign will be available for use by all British Columbia ISED certified operators by booking time slots during April 2024. To book a slot, contact VE7RCAF@gmail.com. QSL cards and awards will be available to commemorate contacts, and special recognition will be provided to those who contact all the RCAF special event stations across Canada during the month.

There is a Google calendar for BC Amateurs to reserve the use of VE7RCAF at their station. Only one booking per time slot is permitted as VE7RCAF may only be used by one individual or club at one location at a time. Further information is available on the VE7RCAF QRZ page.

For information on the RCAF 2024 Centennial itself, check out https://rcaf2024arc.ca/

~ John VE7TI

Page 13—News You Can Lose

The Lighter Side of Amateur Radio

The Radiant Radio Club:

Where Signal Strength Meets Fashion Finesse

Breaking News: Amateur Radio Club Elects to Dazzle the Airwaves with Colorful Attire

By Chuck "Morse" McLaughlin

Pouce Coupe, BC — In a move that has left seasoned hams scratching their heads and adjusting their squelch knobs, the Radiant Radio Club has unanimously voted to revolutionize the world of amateur radio. Their groundbreaking decision? To outfit all members in vibrant, eye-searingly bright hats and shirts during club events.

"We've been transmitting in monochrome for far too long," declared club president Daisy "FM" Thompson, her neon-green beret practically glowing in the dimly lit meeting room. "It's time to inject some pizzazz into our QSOs!"

The Fashion Spectrum

The club wasted no time in selecting their official colors. Here's a breakdown of their sartorial choices:

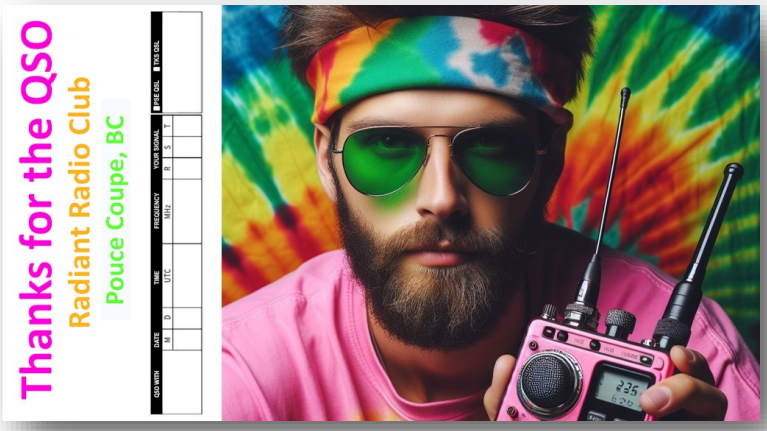
Hot Pink: For those who like their Morse code with a side of sass.

Electric Blue: Because nothing says "I'm monitoring the ISS" like a shirt that could be seen from orbit.

Lime Green: Perfect for blending in with the foliage for POTA. Also doubles as a safety vest.

Safety Orange: For emergency communications enthusiasts who want to be visible even in a solar flare.

Tie-Dye: Reserved for the most enlightened members. They claim it enhances their psychic connection to the ionosphere.



Field Day 2023 at the local fairgrounds.

Left to right: Bob "Propagation" Jenkins, Walter "Bandwidth" Murphy and Harold "Squelch" Thompson

Field Day Shenanigans

At their recent field day, the Radiant Radio Club set up their antennas, generators, and a makeshift fashion runway. As the sun dipped below the horizon, they strutted their stuff, each member radiating (pun intended) their unique style.

Bob "Propagation" Jenkins sported a fluorescent yellow bucket hat adorned with tiny antenna replicas. "I call it my 'DX Cap'," he said, winking. "It helps me catch those elusive ZL stations."

Gloria "Sunspot" Rodriguez twirled in her tie-dye shirt, her rhinestone-studded mic flag spelling out "73" in glittering letters. "I'm all about positive vibes and low SWR," she giggled.

Walter "Bandwidth" Murphy rocked a neon orange Hawaiian shirt, complete with palm trees and miniature repeater towers. "I'm channeling the troposphere," he explained. "Also, it hides coffee stains."

DXpedition or Carnival?

Critics argue that the Radiant Radio Club now resembles a cross between a DXpedition and a psychedelic carnival. "I tuned in expecting propagation reports," grumbled Harold "Squelch" Thompson, Daisy's long-suffering husband. "Instead, I got a rainbow parade. My eyes are still bleary from the tie-dye."

But Daisy remains undeterred. "We're not just transmitting signals; we're transmitting joy," she declared. "And if that joy happens to be magenta, so be it."

So, the next time you hear a voice crackling over the airwaves, don't be surprised if there is a chorus of neon hats and a burst of tie-dye on the other side. The Radiant Radio Club is rewriting the rules, one fashion-forward CQ at a time.

"This is Silas "Sideband" Smith, signing off in style. Over and out!"

Disclaimer: The Radiant Radio Club does not guarantee improved signal strength due to colorful attire. Batteries not included. Consult your fashion consultant before attempting any tie-dye experiments.

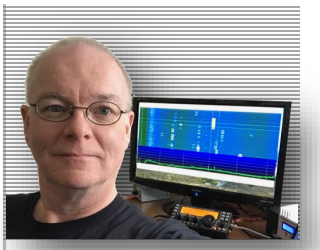
~

Radio Ramblings

Happenings in the shack

The search for great coffee and more…

by KEVIN McQUIGGIN VE7ZD / KN7Q



Kevin VE7ZD/KN7Q is a former SARC Director. He is active in EME, meteor scatter and much more. He now lives on Vancouver Island

A lot has been happening here in the shack. Rather than focusing on a single topic, this issue I'll cover a few of the projects and other things that I am working on here on Vancouver Island. Here we go!

The Search for Great Coffee

Laura VE7LPM and I moved to the Island from the Lower Mainland in October 2022. After the dust had settled on the move, we started to look for a good place to visit for coffee in the mornings, as we like to do three or four times a week. We prefer friendly, independent coffee shops with great java and good WiFi, as we get lots of work done in that type of environment. Each installment of "Radio Ramblings" usually has a few "extra large" coffees behind it.

We tried a few different shops: too busy; bad coffee; haughty staff; uncomfortable furniture. The environment was underwhelming. Then, thanks to our new neighbours, we found a fantastic coffee place. It has friendly staff, excellent coffee, good WiFi, super-comfortable chairs and, notably, a broad selection of other interesting customers. We had our "go to" coffee destination!

Serendipity

After a few weeks of visiting our new coffee place we grew to recognize some of the other regular customers. A quick wave and "good morning" led to short conversations with some of them.

We started talking with a very nice lady who was usually out for coffee in the mornings like we were. Small talk over a few weeks led to longer conversations, and interestingly, to the discovery of shared interests in many facets of life. We didn't expect it, but (as happens in life) serendipity had struck.

We learned that the lady's name was Donna MacKenzie, and that she had been married to her husband Hector for fifty-nine years. They had both been regulars at the coffee place until Hector had become ill. He passed away in the spring of 2022. Donna had continued the morning coffee routine on her own because it was something that she and Hector always did, and because she, like us, loved a good coffee in the morning. She became a friend, and we enjoyed (and continue to enjoy) talking with her a couple of mornings a week.

Hector MacKenzie, VE7DYR

We learned a lot about Donna and Hector and their journey through life. Both had had interesting careers and lived in many places both as children and as adults. Despite getting older, both Donna and Hector had clearly retained their positive outlook, their interest in learning, and their curiosity about all aspects of life. Aging had not dampened their spirit nor affected their belief in their ability to learn [1].

To my surprise, I learned that Hector had been an active amateur radio operator (VE7DYR) for most of his adult life. He had a professional electronics background and had owned a successful radio and television repair business in the 1950s and 60s in Victoria. He left his business to join the Department of National Defense in 1963, where he used his electronics knowledge to perform highly technical work and contribute to important projects for the Navy and other Canadian armed services.

Hector became licensed as an Amateur (VE7DYR), and a year later an Advanced Amateur, in the 1970s. An avid CW DXer, he had a couple of towers and a full suite of modern transceivers. He was a "technologist" [2] and a kit builder (as many of us are today) and because of his professional electronics training was easily able to modify his radios to improve or even extend their performance. Figure 1 shows Hector in his shack in Qualicum Beach in the 1980s.

Figure 1 – VE7DYR (circa 1985) [3]

Through many conversations with Donna, Laura and I heard lots of stories about Hector, his dedication to amateur radio, and to amateur radio training for new hams. I felt that it was too bad that I never met him, as I am sure that we would have had a lot in common and been good friends. Hector would have been a great asset to any amateur radio club, and had he been a member of our club I am sure that many of us in SARC could have learned a lot from his knowledge, experience, and most importantly his enthusiasm towards amateur radio and to life.

As they had been married for over half a century, Donna was still coming to terms with Hector's loss, but over several months she had progressed to the point of being able to deal with his estate. One of her biggest concerns was the dispersal of Hector's amateur radio equipment: decades worth of rigs, antennas, test equipment and all the bits and pieces that are in every ham's shack. Donna is not a ham, doesn't have a technical background, and (as Hector had not been active on the bands for the latter part of his life) she had no contacts in the amateur radio community. Dispersal of this equipment was a concern.

Hearing this, Laura and I volunteered to help. I told Donna that I would be able to evaluate Hector's gear and help her price and sell it. We could post the equipment on some popular online sales sites at a fair price and seek to first sell the gear locally. If local sales were unsuccessful then we could look at other national/international services.

Having someone with lots of amateur radio experience writing the advertisements and answering inquiries from potential buyers would hopefully generate sales, and also ensure that Donna was not taken advantage of because of her own lack of knowledge of amateur radio. A bit more on this below.

I suggested that we try to post the equipment first on the popular (Canadian) amateur radio marketplace "hamshack.ca" [4], and that we use other bigger services such as eBay as backup, in case the equipment does not sell on the Canadian service in a reasonable time. The "third tier" option would be to sell any remaining gear at local hamfests in the spring of 2024.

Donna thanked us and accepted our offer of assistance. She decided to sell Hector's three commercial rigs (classic Drake, Ten-Tec and Icom HF transceivers) and some of his ancillary gear such as multiple CW straight keys on hamshack.ca, but to hold back other (primarily) test and station support equipment (antennas, keyers, meters and the like) for donation to deserving new hams who are just starting their amateur radio journey. Donna was particularly interested in helping new female hams, and young people who are just starting out in the hobby. Hector's gear could help these new hams learn and grow, and it would pass on the enjoyment that he had garnered from the hobby.

This was an excellent idea, so Laura and I agreed to work to find good homes for the balance of the equipment. The Drake and Ten-Tec rigs and the straight keys sold quickly via hamshack.ca, but the Icom rig (which was non-working) languished both on hamshack.ca and eBay, so with Donna's agreement we moved it to the "donation" category after about two months.

SARC has a large membership that includes many new hams and the demographic within our club differs significantly from that of the average amateur radio club [5]. SARC includes many younger hams, both male and female, and the club membership reflects the diversity of Canada and our local community. With Donna's agreement I made arrangements with SARC's leadership to deliver the equipment donation to the club and to help find deserving new hams in need of equipment who could make use of it.

This was successful, and much of VE7DYR's equipment was placed with young SARC members by the end of January 2024. One recipient of an antenna, SWR meter, multimeter, CW key and transmatch was Katrina VA7WBT, a recent graduate of the SARC course. See Figure 2. Katrina is assembling her first HF station and I am sure that VE7DYR's gear will be put to good use. Hector would be very happy!

The balance of the donated gear is with the SARC Executive, who will continue to seek deserving homes with young/new hams for it. Some of the gear may also be sold to the

membership, or to the general amateur radio community if a home cannot be found for it over the next several months. Donna is happy with this too, as any funds generated will be used to support the club's activities.

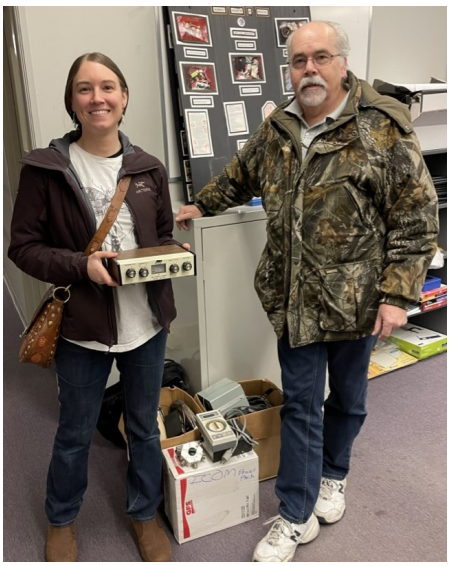


Figure 2 – Katrina VA7WBT Receiving Donated Equipment, with SARC President Steve VE7SXM

What About You?

This project led me to thinking about the bigger picture. What will Laura do with my own ham gear, computers and test equipment after I die?

It's a fact of nature that no one lives forever. Disposition of your station and other amateur radio equipment after your death is a subject that deserves sober consideration. Every ham (especially those of us who are older) needs to think about what we want done with our rigs, antennas, test equipment and other gear either when we die, or when we become unable to operate our station any longer. You need to make a plan!

Inclusion of your amateur radio gear in your will is a very good idea because it allows you to give direction to your Executor about what you want done with your equipment after your demise. Perhaps you would like to pass it on to a family member, or to your local ham club, or, like Hector and Donna, to a deserving young ham that you know. Documenting these details in your will makes your wishes clear to your survivors.

Speaking with your spouse or partner about your wishes is also a very good idea as it will help her (or him) know what you would like done with your ham equipment after you're gone. Our partners are often not hams themselves; talking about your rigs and equipment will let your significant other know what all the gear does, where it fits into an amateur station, and its approximate dollar value should you or your partner like your gear to be sold upon your demise.

It is an unfortunate fact of life that there are unscrupulous people out there who will try to leverage a grieving spouse's lack of knowledge of their late partner's hobby to make "lowball" offers and buy valuable gear at ridiculously low prices. I have heard of equipment worth about $1000 in "good used" condition being low-balled and bought for $50 by an unscrupulous individual who bullied a ham with early-stage dementia into a sale. Shameful.

This is unethical, of course, but these people are out there, so your surviving spouse/ partner needs to know a little bit about what your station equipment is worth. Some discussion while you are still capable might help your partner from being taken advantage of after your demise.

The total monetary value of the typical ham's amateur radio gear can be significantly more than you might expect: the value of all those rigs, accessories, test equipment and other gadgets adds up! Your survivors will never recover this total value, of course, but knowing the approximate new value of all your gear will help them price your equipment for a competitive "used" price.

If your children or grandchildren are hams, or even just have an interest in the hobby, then you could decide to pass your equipment on to them in an inheritance. This is a route

commonly taken by many older hams as interest and certification in amateur radio tends to have a generational component.

If you want your amateur gear to be sold after your demise, then it is good to have a trusted ham friend who can provide advice to your estate as to description and pricing of the gear that will be sold. Amateur radio has its own "lingo" and terminology, and a non-amateur would be far less effective writing a "for sale" advertisement for, say, an HF rig, an SWR meter, or a loop Yagi antenna than a seasoned amateur would. Find a ham friend you trust and enlist his or her assistance in advance so that he will be available to help your spouse/partner with describing and showing your gear to prospective buyers.

Another great idea, in my opinion (if your survivors can afford it), would be to donate your equipment to an amateur radio club, or to a new ham who is just starting out on his or her own amateur radio journey. You and your partner can decide on criteria for donation as you wish. This was the approach taken by Hector VE7DYR and his wife Donna. As I noted above, Hector was an avid operator and highly supportive of new hams and helping those who were just getting started in the hobby. Donna decided to donate some of Hector's gear to new hams who would be able to use his equipment and develop their own amateur radio skills. After Hector's death, some of his equipment was sold, some donated to SARC, and the rest donated to new hams. In this way, VE7DYR's gear will "live on" and provide pleasure to new owners. What a nice legacy.

These issues are of especial importance to amateurs without family or children of their own. There will be no one other than a surviving spouse or a trusted friend to deal with the SK's estate. It is very important for those in this situation to identify an Executor and discuss their wishes with that person before it is too late!

While no one likes to think about their own eventual death, doing so and making a plan before the event will simplify the legal processing of your estate, clearly describe your wishes, and ease the road for your survivors. Give the topic some consideration.

Antenna Raising at VE7ZD

Now on to a less serious topic! Since moving to Courtenay in late 2022, my HF station had been coping with a couple of (objectively) very poor antenna installations.

I started HF operation here with a "Packtenna" end-fed longwire antenna that was tied to the neighbour's fence on one end and to a handy chain link fence at the other. See Figure 3. Antenna elevation was about six feet. The Packtenna is a pretty good low-weight wire antenna that is convenient for hikers and weekend portable operators. It covers a few of the HF bands, but its SWR is not great on most of them.

Figure 3 – Original Packtenna Installation

The antenna worked, though, and I was able to work all through the US and Canada and made several DX contacts but having it as my sole HF antenna for about 6 months was not a great experience. I could "hear 'em" but not "work 'em". I longed for more height and the improved RX signals that I

would see if I could better deploy the Packtenna or replace it with even a simple dipole for (say) 20m. If I got an antenna up a bit higher, then the DX would hopefully start to hear me.

To that end, in the spring of 2023 I bought a slingshot and had success with a big alder tree here on our lot. I got a loop through the tree at about 40 feet. This allowed me to retire the Packtenna and replace it with the 80/40/20/15/10 metre fan dipole that I had used in Burnaby for the past few years.

I was repeatedly unsuccessful, though, at getting a loop through a towering fir tree also on our lot for the other end of the dipole. The density of the fir's branches made getting a successful shot through them nearly impossible. The slingshot weight would get hung up in the branches and not drop back to the ground. After losing about five weights I resolved to go with a "sloper" (a sloping dipole) until I could wrestle further with the tall fir. I put one end of the fan dipole up in the alder tree at about 35 feet and tied the other end to the chain link fence rail.

This second installation proved to be much better than the Packtenna, and I was happy with it as I was able to hear much more DX and actually work stations in Africa and throughout South America and Asia.

Enter "Sasquatch Tree Services". Last fall we hired this excellent company to take down a couple of dangerous trees on the property. One large fir was dying and leaning precipitously towards the neighbour's brand new carport and wood shed. I lost sleep during the windy season here on the Island fearing that the old tree would give way, fall on the neighbour's buildings and generate an embarrassing (and probably costly) incident. The tree had to go. As new residents here we didn't want to get into that situation, so I did some research, found an experienced tree removal company, and hired them to bring the old fir down.

Simon, the company's owner, was also the primary climber. They came onsite, took the tree down, and also helped us get rid of the wood. We don't have wood burning fireplaces so some of the bucked-up sections went to one of our neighbours. The balance was donated to good causes.

Simon noticed my sloping dipole and inquired about what it was for. Ever a ham radio "booster", I described the hobby and explained how the antenna works. He thought that the hobby was very interesting and marvelled at the distance that some HF contacts could reach.

It turned out Simon has worked with local hams on antenna deployments before, and most recently helped a ham in our area deploy two dipoles at 90 degrees offset at about 100 feet in the fellow's fir trees. Serendipity had struck!

I made an appointment and in early January Simon returned with his climbing gear and placed a non-destructive double rope loop with a carabiner in it around the big fir tree about eighty feet off the ground. We put a sturdy rope through the carabiner to serve as the hoist/lower mechanism for the antenna. I raised the far end of the dipole "way, way" up and the fan dipole finally had decent elevation.

The antenna was now much higher on the fir side than on the alder side, so Simon suggested that we try to get the alder side up higher as well. Some quick work with an arborist's bean bag and tossing sling got the low side of the antenna up to a better height as well. I raised the alder side of the dipole and tightened everything up, leaving suitable slack for the movement of the trees in the windy season here. See Figure 4 for the new antenna.

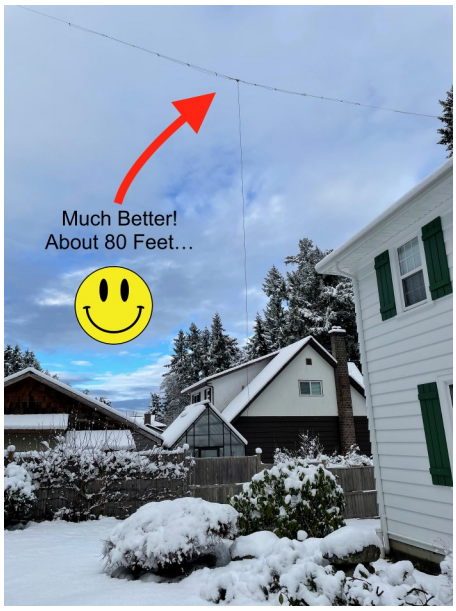


Figure 4 – Fan Dipole at ~80 Feet

My HF RX performance has significantly improved, and I am hearing DX that I never could before. The overall performance improvement is incredible, and I have worked five new DXCC entities. Get your HF antenna up as far as you practically can.

There's an educational aspect to this story: it is sometimes better to hire a professional for things like this than to try to do it yourself. It's safer and the job gets done right.

I had climbed big fir trees to install antennas in my youth, but I lacked the right equipment for the job and tried to "make do" with what I had on hand. I got the antenna up, but the climb was risky and messy due to pervasive "sap" on the exterior of the tree. It took me about three hours, plus about a week to get the sap off my hands and out of my long hair (those were the days!).

Simon had all the right gear, professional certification and plenty of experience and was able to get up the tree, install the loop and carabiner and get back down in under 30 minutes. Much more cost- and time-effective to spend $100 on the job than to try to do it myself.

Update: Software-Defined EME Station

Readers may recall that I discussed re-deployment of my 23cm EME station last year in this column. Last spring I put a steel support pole for my 2.4 metre dish into a concrete base, got the antenna tracker firmware finished, and installed the tracking controller in a weatherproof box attached to the pole. Cabling followed, but I decided to operate from a portable table deployed beside the dish as I had not had time to trench some conduit and pull feedlines and control cables between my basement shack and the dish. My setup from last summer is shown in Figure 5.

Figure 5 – EME Antenna and Outdoor Operating Position: Summer

This setup had several advantages and disadvantages.

An advantage was that feedline losses at 23 cm (1.2 GHz) are significant, so the short run of LMR600 coax between the dish and my transceiver (only about 10 metres) was beneficial. Cable losses between the dish and my shack (a distance of about 30 metres) would be several times higher: 4.2 dB versus 1.1 dB for the shorter run.

A disadvantage of operating outside on the portable table was that operation was subject to weather. Murphy's Law dictates that the best moon passes will take place when it is raining.

Setting up the station took about 30 minutes. I was able to leave all the gear outside and connected at night (or during the day when I was not using the station) by covering the table with a large waterproof tarp [6]. This protected the gear from the occasional rain shower: fine in the summer months, but with the seasonal rain we experience on the south coast and on the Island, it makes operation in this type of format essentially impossible from (usually) mid-October through mid- to late March. Atmospheric rivers and outdoor, unprotected ham radio do not mix well.

It's no fun not being able to operate through the winter months!

For this season, I want to move towards inside operation. I will trench out a path between the dish and the basement shack, install conduit big enough to handle several cable runs, and run control cables and coax between the dish and my shack.

Cable losses will greatly increase, but I will compensate for these on TX by adding a second weatherproof box at the pole and putting my 23cm power amplifier (PA) inside the box right next to the antenna. My PA needs only 1.5 watts input to develop full output of 350 watts, so I will simply increase power output from the transmitter in the shack to compensate for the 3.1 dB (4.2 minus 1.1) additional power loss due to cable length. 3 or 4 watts output from my IC-9700 transceiver will probably do it.

On the RX side, I plan to move from traditional reception using the IC-9700 (RF goes into the transceiver) to SDR-based reception using DSP code that I developed last fall through the winter. Gnuradio was used to prototype this code, and I wrote the current production version using LiquidDSP. I have discussed both (excellent) DSP packages before in this column [7].

In this receive model, the RX RF will go into an Ettus SDR that I will co-locate with the PA in the new weatherproof box at the pole. A small computer (Raspberry Pi 4, or rPi4) also in the box (running my new DSP code) will interact with the SDR to receive the 23 cm RF and process it to generate an IQ data stream which will be delivered via CAT5 cable through the conduit back to my laptop in the shack. The IQ data represents an audio signal which will then be decoded by WSJT-X to recover the received EME signals from 23 cm. This approach will nicely sidestep the need to send 1.2 GHz RF down 120 feet of coax, eliminating the problem of RX signal loss.

If I have time to finish the 1.5-watt 23 cm driver amplifier that I discussed briefly last column, then I will be able to improve the SDR-based system even more. My new SDR code handles TX as well as RX, so for TX periods I will be able to send WSJT-X TX audio down the CAT5 cable to the rPi4 at the pole, where my code will generate 200 milliwatts RF at 1.2 GHz. This 200 mW will be amplified to 1.5 watts by the (to be completed) driver amplifier; then this 1.5 watts can go into the big PA to generate 350 watts for the dish. I'll then have a full SDR transceive solution; the IC-9700 can be retired from its role in the EME station.

FT4

Last topic for this issue will be a short report on FT4. As you may know, FT4 is a weak signal mode that works well on HF and that uses a transmit/receive cycle that is one half of that used by the ever-popular mode FT8. Halving the TX/RX cycle greatly speeds up the pace for HF digital QSOs and a full FT4 QSO can be completed in under 30 seconds. A minimal logable QSO can take place in 23 seconds. Each TX/RX

cycle is 7.5 seconds in duration: one half of the 15-second segments in FT8.

The faster cycle time trades off some of the RX sensitivity that FT8 is notable for, but in my experience the faster pace of calling more than offsets this reduced sensitivity. I had spent a bit of time with FT4 when it was first released in 2019 but had not used it much since then. I thought that I'd give it a try again in December just for something different.

I was surprised at the amount of FT4 activity on HF, in particular on 10 and 15 metres, and the faster pace of the QSOs kind of hooked me. I'm not a "paper chaser" but after looking at my log and seeing that I had about 20 states worked on FT8, I thought that I would focus a bit on the mode and see how long it would take to work the balance and complete WAS.

The level of FT4 activity on the bands was such that I was able to complete the WAS in about two weeks, without "knocking myself out", but rather just being on the air and hunting a bit for a couple of hours every day or two.

I submitted my QSOs via LoTW (Logbook of the World) and applied for FT4 WAS. Unfortunately, I shortly thereafter learned from the WAS Program Coordinator at the ARRL that most of my older FT4 QSOs did not count for WAS because of our house move from grid CN89 to CN79 in late 2022. I had exceeded the "maximum radius for eligible QSOs" rule by about 30 km. Too bad!

The bottom line was that about 20 of my older FT4 QSOs did not count. I would have to re-work these states. Even though I am not a paper chaser, this chafed at me, so I decided to "bear down" on the task. To my surprise, I was able to re-work the ~20 missing states and get the WAS application complete within two days. Granted, this took about 12 hours "on air" time over those two days, but it was worth it to complete the award. It's a testament to the current level of activity on FT4.

Quite typically, Delaware was the last state that I needed, and it took about 4 hours of digging to find and work a DE station who was on LoTW and submitting confirmations there in a timely fashion. Thanks, N3TTT!

FT4 is similar in how it operates to FT8 but is not strictly a "subset" of that mode. Rather, it is an application of the same signal processing techniques to the problem of HF weak signal detection, but in a 7.5-second turnaround period, rather than the 15-second period used by FT8.

A trade-off employed for FT4 is that signal detection limits are reduced by about 3 dB (one half) compared to FT8, and FT4 signals occupy about 30% more bandwidth (~65 Hz for an FT4 signal while FT8 occupies only ~50 Hz). Both modes use forward error correction (FEC) in a process quite similar to the method that I described for WSPR in this column in the September/October issue of The Communicator [8]. FT8 and FT4 were fully described in a technical article in QEX in the July/August 2020 issue. The article is available online at https://wsjt.sourceforge.io/FT4_FT8_QEX.pdf [9].

Both FT4 and FT8 can detect and correctly decode signals many times weaker than the minimal detectable CW signal. They offer amazing performance, and every HF operator interesting in DXing should use them.

FT8 is part of the WSJT-X software suite, and can be selected via a pushbutton in the control panel at the bottom left of the WSJT-X home screen, as shown in Figure 6.

If you're looking for something different on HF, give FT4 a try.

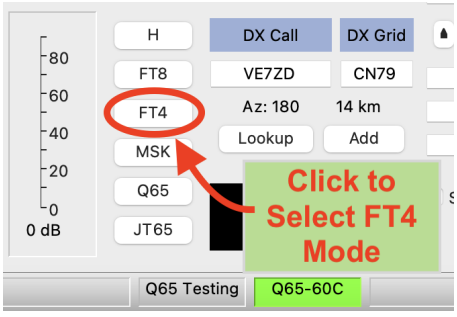


Figure 6 – Selecting FT4 Mode in WSJT-X

There is a ton of DX on both 10m and 15m as of this writing.

Conclusion

That's it for this issue. Be sure to take some time to consider how you would like your rigs and station equipment disposed of when you can no longer operate. Time waits for no one.

Donation of your gear to up-and-coming new hams is worth considering; not only because all new hams need a rig and station accessories, but also because your equipment could help these new people have fun and learn. As the saying goes, consider "paying it forward".

Alternatively, making plans for sale, or even valuation of your gear by a trusted friend, will ensure that your equipment gets sold at a fair price when that day finally comes.

Finally, consider giving FT4 a try if you aren't active on the mode already. There's currently excellent DX on the bands, and the faster pace of FT4 contacts makes the mode quite fun.

As always, feedback on Radio Ramblings can be directed to the Editor, or directly to me at mcquiggi@sfu.ca. Thanks for reading!

73,

~ Kevin VE7ZD / KN7Q

SURREY SARC AMATEUR RADIO CLUB

We Have A SARC Patch!

These are suitable for sewing on a jacket, cap or your jammies, so you can proudly display your support for the club.

The price is $4 each or three for $10 and they can be picked up at a meeting or the weekly Koffee Klatch.

We thank our sponsors for their SARC support.

Please support them.

References:

[1] I have mentioned mental attitude in relation to learning and aging in this column before. As many of us get older (and even if you are a young reader!) it is important to remember that, with dedication and effort, you CAN keep up with technological changes and new scientific discoveries as you get older. Don't fall into the trap where you start to believe that you can no longer learn. More importantly, don't listen to those others who have already succumbed to this fallacy. Life will be way more interesting and fun if you keep learning and experimenting.

[2] I wrote about the two main classes of amateur radio operators ("technologists" and "communicators") in this column last summer. The technologist's main interests are in the "nuts and bolts" of radio science and technology, while the communicator's main interests are in the effective use of radio technology to support emergency communications and community service. Currently, communicators outnumber technologists in amateur radio, but up until the 1990s the statistics favoured technologists and about 80 percent of amateurs were focused on radio technology and experimentation.

[3] Photo from VE7JY's web site. See https://www.oocities.org/capecanaveral/hall/6451/gallery.html.

[4] Hamshack.ca is online at https://hamshack.ca. I have used it quite a bit and think that the site offers excellent services to Canadian hams. Our postings of VE7DYR's gear on the site generated lots of inquiries with subsequent sales.

[5] Studies of North American amateur radio (and radio club) demographics indicate that the average amateur is a white male 55 years of age or older, and the average club is typically composed of older adult males who tend to focus on a small subset of amateur radio modes and operational environments. There is an under-representation of young people and women in amateur radio, and many radio clubs do not accurately reflect the demographics of their communities.

[6] This would never be possible in the city due to the increased risk of theft! We are fortunate that living in a small town (and in the countryside well away from the centre of town) reduces the risk of random thefts that are, unfortunately, all too common in cities like those in the Lower Mainland.

[7] Gnuradio is an excellent GUI-based SDR prototyping tool, see https://gnuradio.org. LiquidDSP lacks a GUI but provides quite a complete toolset that allows prototyped designs to be quickly implemented in procedural programming languages such as C or C++. See https://liquidsdr.org.

[8] All issues of "The Communicator" are archived at https://archive.org/details/sarc-communicator-2023-09/page/14/mode/2up. See page 15 of the September/October 2023 issue, "The What's It of WSPR".

[9] If you are just learning about digital radio and signal processing, then you should not be overwhelmed by the level of technical detail in this article. Just skim the challenging bits until you have more of a DSP foundation. You can still learn a lot from just focusing on those aspects you understand at the moment. However, as time goes on you will skim less and understand more: that's the fun of learning!

Social Reminder

The Saturday weekly social gathering is once again 'on' at the Denny's Restaurant, 6850 King George Blvd., Surrey BC from 07:30—09:30. All are invited. Afterwards, we will host workshops and will be available to invigilate Amateur Radio exams at the OTC, 5756—142 Street, Surrey from 10-noon.

Bring your ham issues, our Elmers will try to help you sort them out.

BCQP February 3–4, 2024

Wasn't that a PARTY?!!!

by REBECCA VA7BEC and KOJI VA7KO KIMOTO

Rebecca Kimoto VA7BEC is the Secretary and contest coordinator for the British Columbia QSO Party, held on the first full weekend of February each year.

Visit ORCA at: https://www.orcadxcc.org/index.html

The BCQP 2024 took place Feb 3 -4, 2024, and drew participation mainly from within North America, as QSO parties tend to do. As of the Feb 19 log deadline, 370 logs have been received: 46 BC, 43 rest of Canada, 272 U.S. and 9 DX.

Why the huge number of logs from the U.S. and such a small number of logs from BC stations, especially when there seems to have been a lot of BC stations on the air? Good question. I can think of many possible answers, but since this a long-standing trend rather than a one-off occurrence, I'd have to say it's a mindset thing. BCQP is attended by many VE7/VA7s who are just out to support the cause, so to speak, to activate a district or give some pals a few Qs. They aren't interested in a certificate or figure they won't capture a certificate with a low score so they aren't motivated to submit a log. Meanwhile, U.S. operators seem more inclined to submit a log if only to ensure that the BC stations they contacted get points for the QSOs. The purpose of log-checking is to weed out busted callsigns and incorrect exchanges, and reciprocal QSOs facilitate confirmation of not only QSO activity but claimed score as well.

Scores for BCQP 2024 will probably be announced in April, and my number-crunching analysis, based on the content of submitted logs, will be included in the after-party report that I hope to have ready by May.

By the way, everyone who submitted a log will have received a confirmation email. If you submitted a log — or thought you did — and didn't get a confirmation email from

me, please check your Sent Folder and make sure you sent to VA7BEC@gmail.com not VE7 and not to my old rac.ca address. I will still accept logs that come a bit late, as long as it's clear that the initial attempt to submit a log occurred before the log deadline.

So... how was BCQP 2024? At VA7ODX, I'd say it was fabulous. My CW partner and I tried to be everywhere all the time but of course neither of us could be on multiple bands of the same mode at the same time. That said, we were kept very busy. And it was great fun.

CONDX was exponentially better than in past years. And this may be why I got a sense that there were more BC stations on the air and more stations activating certain districts as well as more districts activated. Number-crunching with overall data will tell the real story, but even looking at just the sponsor station log, there are more VE7/VA7s and a wider assortment of BC districts. Granted, my wonderful CW partner and I tried to be everywhere, moving from band to band on each mode, but I know for a fact that we had Qs with stations we rarely hear or are heard by. This sentiment was echoed by many BC operators. CONDX definitely played a part in sustaining a satisfying run rate, which in turn, kept BC operators in their chairs, calling CQ and building big logs, while outside-BC participants had more success in their hunt for VE7/VA7s.

The overlap with NA Sprint CW is often quite frustrating for BC stations in BCQP. But this year, the situation seems to have been far less stress-inducing. I've heard from several CW operators that trades, or at least the exchange of required info, was relatively smooth and efficient and the majority of Sprinters got the info they needed and moved on to allow BC stations to continue calling CQ BCQP. This is a win-win situation for everyone. If BC stations can hold their running frequency to call CQ BCQP, they will stay on the air. And if they stay on the air, Sprinters will have more opportunities to put the lovely BC mult into their Sprint logs, and non-Sprinters will be successful in their the hunt for BCQP districts on the low bands Saturday evening.

This year, we set up a rally schedule for 80m and 160m in the last hour of BCQP on Saturday (0300z-0000z). Early indications are that this was helpful, and the cluster did show a nice collection of CQing BC stations, making S&P so much easier. How many Qs took place during the rally? Which mode saw more activity? Was 80m better than 160m? Answers to those questions may be revealed through my number-crunching analysis of submitted logs. Stay tuned. Regardless, I have received enough positive feedback to keep the rally in place for 2025.

There were — always are and probably will continue to be — challenges. Some are station-specific. Some are more pervasive. Some can be mitigated. Some cannot. Depending on QTH, CONDX might not have been great, good or even mediocre. Local noise might have obliterated outgoing CQs and incoming responses. Maybe there were issues with individual station setup, constraints on operating time or a mess of conflicting activities. But I would guess — and 3830 comments and scores so far seem to bear this out — anyone who was really in the hunt for BC stations achieved very commendable results and any BC operator who spent time in the chair calling "CQ BCQP" built tremendous logs. I think a lot of personal bests have been bettered and old records are going to be broken. J

My thanks to all who participated in BCQP 2024 or helped others get on the air. It was a whale of good time. Let's do it again next year.

73,

~ Rebecca VA7BEC (PH op @VA7ODX)
Koji VA7KO (CW op @VA7ODX)

Solder Smoke

How I Install Coax Connectors

A skill that you can master

by JOHN BRODIE VA7XB

JOHN BRODIE VA7XB with a practical article on the common PL-259 connectors

I want to share some things I have learned over the years about installing coax connectors. Most of the ideas presented below are not new or unique, as some have been borrowed from other experienced users.

Firstly, I have to say I don't care for the crimp-on connectors. Sure, they are quick and easy to install but the crimped braid contact often fails in situations where the coax needs to move or flex repeatedly when in use. I have heard it said that properly prepared, they are just as reliable as the soldered variety, but I haven't found it so, therefore I avoid using crimp-ons wherever possible.

The connector you can use for almost everything in HF and most often in VHF/UHF is the PL259, with or without an adaptor, originally made by Amphenol with silver plating and bakelite dielectric insulation, but now available from off-shore sources using other heat-resistant insulating materials such as Teflon.

Silver plated connectors are preferable to for ease of soldering. I confess I have departed from my strict rule of "Amphenol only" and do use connectors made in China which I find are of acceptable quality compared with what was available 10 years ago if purchased from a reliable source (e.g. RF Connections not Amazon).

Connectors with 4 holes in the inner shell are most common and work well but they are also available with 2 slots rather than 4 holes. I don't use the connectors that simply screw on without soldering of the braid as I am "old school" and like everything soldered.

The corresponding female connector is the SO239 if you are using them in equipment. Double female connectors are also available for joining lengths of coax, and right-angle for specific applications but neither require soldering.

This article will not cover BNC or N-type connectors which are less popular but certainly have their applications. However, if you need that type of connector, you can use an adaptor to take it from PL259 to almost anything else.

This tutorial will cover the most common kinds of coax you are likely to encounter in HF ham radio applications. All of them are 50 ohm impedance but they come in 3 common sizes: a) the largest, used for high power/low loss, is the old RG8, or newer RG213 or, best of all, LMR400; b) the intermediate size, flexible and versatile RG8X and c) slightly smaller, the venerable RG58. A miniature size, RG174, may also be used in certain applications but is not discussed here.

Make sure that you use the correct size of connector as they are size specific. A connector made for RG8X will not work for RG58, for example. If you want to install the intermediate or smaller sizes of coax using PL259, you will need an adaptor.

Tip #1: Your experience will be much less frustrating if you use a vise to hold the coax while you are soldering it – unless you have a helper, your two hands will be busy holding the solder and the iron (and in my case, the camera!)

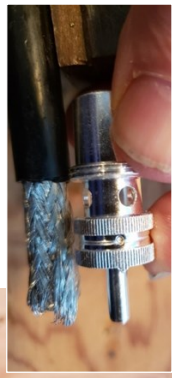
Tip #2: Many of my problems with installing coax connectors have been because the iron was not sufficiently hot. I recommend a 60w iron with a fine chisel tip. Don't try and do the job with an iron designed for printed circuit components as it may not deliver sufficient heat. Try it and you will soon find out what works.

Tip #3: Next, use only conventional 63% tin 37% lead solder with a rosin core, which may be labeled as 60-40. The so-called "lead free" solder is about 97% tin plus 3% silver or copper but its most prominent fault is that it melts at a significantly higher temperature. Also avoid use of solder without a rosin core including "plumbers" solder which usually requires use of externally applied flux. Don't buy your solder at Home Depot because all they sell is the lead-free variety.

Part A. Soldering PL-259 Connectors with RG8, RG213 and LMR400 Coax

Step 1: The first thing to do is unroll the coax and string it out along the floor, because you will need to rotate it when soldering the braid to the shell, and an uncoiled or partially coiled length is very difficult to rotate and hold in place while you are working on it.

Step 2: Now separate the shell of the connector from the ring, then slide the ring over the coax in the correct direction. Don't forget this step or you will be cursing when you have to cut the cable and start again because you have neglected to do so!



Step 3: With a sharp knife, carefully cut the outer jacket all the way around the end of the coax for about 1 inch (25 mm) from the end and discard the outer sleeve. Make sure not to nick the braid by over cutting. The length can be gauged by using the connector shell as a guide.

Step 4: Place the coax in the vise, and "tin", i.e. coat, the exposed braid with solder all the way

around for the first ~1/2" (10 mm) next to the uncut portion. You will have to rotate the coax to do this. The remainder will be cut away so don't bother tinning it.

Step 5: Leaving 3/8" (7 mm) of tinned braid next to the outer jacket, with a sharp knife cut through the solder, the braid, and the insulation right to the inner conductor, making sure you do not nick the inner wire. Discard the cut away portion.

It is important to tin the braid before cutting otherwise the braid tends to become splayed and it may not fit into the shell easily once it is coated with solder.

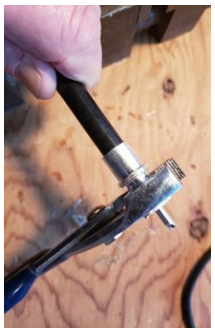
You should now have a clean cut through the dielectric with no braid whiskers intruding into the insulating material.

Step 6: Lightly tin the exposed inner conductor to stiffen it so the strands won't separate when inserting it into the connector. Test the tinned end to make sure it will slide easily into the inner hole of the connector by inserting it in the wrong end as shown.

Step 7: You should now be able to twist the cable into the shell until you can see the tinned braid through the holes in the shell and the inner conductor protruding from the pin. You will probably need pliers to do the job.

Step 8: Solder the inner conductor to the tip, making sure that the solder flows to the inside not the outside of the tip. If you get too much solder on the outside of the tip, it will not fit easily into a female receptacle.

Step 9: Now with the coax in the vise, solder the braid which you should see through the holes in the shell. Place the tip of the iron into the first hole so it contacts both the shell and the previously tinner inner coax braid. Apply solder until it covers the hole. Rotate the coax in the vise and repeat until all 4 holes are filled.



Step 10: Slide the outer ring down over the shell and rotate until it engages with and passes the threaded portion.

Step 11: Use an ohmmeter to confirm that there is no short circuit between the inner conductor and braid. When you have completed the connector at the other end of the coax, you should also test for continuity of the inner conductor end-to-end and braid end-to-end.

You may find additional hints in this video: [PL-259 connector installation on a RG-213 (or RG-8) coaxial cable - Bing video]

Part B. Soldering PL-259 Connectors with RG8X and RG58 Coax

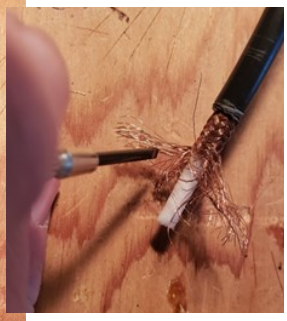
Now we move on to PL259 connectors for RG8X or RG58 – the procedure is not identical. Whichever connector/cable you use, make sure you use the correct size of adaptor, designed specifically for the coax of your choice. Common adaptors for RG8X are designated 83-168 and those for RG58 are 83-185, but they are not the only ones available.

The main difference with this procedure compared with the previous is that you do not tin the braid before inserting the cable into the shell.

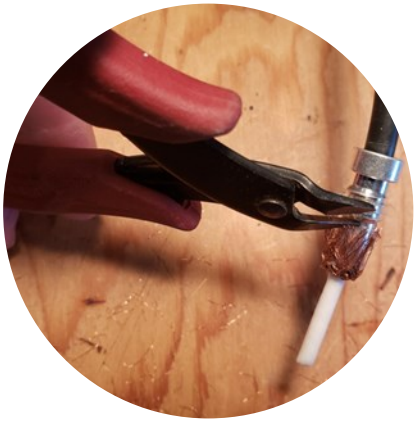
Step 1: Slide the outer shell and the adaptor onto the cable ensuring they are aligned in the correct direction.

Step 2: Cut and remove the first 1 inch (25 mm) of outer jacket, taking care not to nick the braid.

Step 3: Use a small screwdriver or other sharp instrument to separate the braid strands over half of the exposed area.



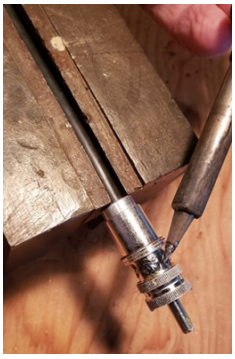
Step 4: Fold back the braid over the adaptor and trim the end of the strands where they extend beyond the threaded area.



Step 5: Strip the insulation from the inner conductor but leave 1/8" (3 mm) of insulation. Lightly tin the conductor so the strands don't separate and short out when inserted into the shell.

Step 6: Screw the coax and adaptor into the shell until it will go no further. You should see the braid through the holes.

Step 7: Solder the inner conductor to the tip and then the exposed braid to the shell through the 4 holes.



Step 8: Screw the outer shell onto the end and you are done, except for testing for continuity and shorts with an ohm-meter as described earlier.

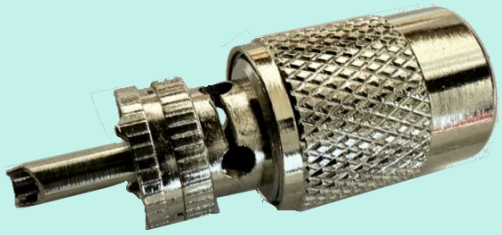
Here is an excellent video that explains the procedure and gives additional hints about soldering: https://youtu.be/InBNyWI1-Ys

~ John VA7XB

TIP!

Many years ago, I was taught a tip about soldering PL-259 connectors by one of my Elmers, John White VE7JW. It has proven to be very valuable over the years.

John conducted quite an extensive test on various connection methods. He found that cutting slots with a hacksaw or rotary tool between two adjacent PL-239 solder holes greatly strengthened the bond and made for an easier soldering process.



~ John VE7TI

Grounding

An Introduction for Your Ham Station

by JOHN BRODIE VA7XB

JOHN BRODIE VA7XB with HFsafety recommendations

There are 3 reasons for grounding and what fulfils one need may not fulfil the others; furthermore, you may not need all three.

1. **SAFETY.** The most important grounding function is safety. Safety grounds protect you in case of a short or inadvertent contact of high voltage to the chassis of your equipment. All modern equipment contains a safety ground through the neutral wire in the plug and receptacle.

   The actual connection to the earth is achieved through the ground rod which you will find very close to your house service panel, so in fact that may be quite a long distance between your station and the actual earth ground. It is a requirement of code that you have this.

   We don't really need to discuss the safety ground further, other than to emphasize for your own protection, don't remove the neutral connection on your equipment plugs, even though the equipment will operate without it.

2. **LIGHTNING.** Then there is the lightning ground. The reality in our area is that we have very little lightning, so direct hits are very rare. In any case, if you have a direct strike, there is little than you can do to prevent damage. Lightning rods will help considerably, but you will only find them around the Vancouver area on tall buildings. Although I have never seen them used on a residential structure locally you will find them on top of the 36-story high rise where our repeater antennas are located.

That doesn't mean you don't need lightning protection, because distant strikes can occur and the RF surge that comes to your station as an RF pulse can potentially damage your equipment.

Your protection for lightning surges is to install heavy conductors from your equipment to a good earth ground and also to have grounded surge arrestors on your coax which you can buy from most radio supply houses for under $100.

Other conductors coming from your antenna, like rotator cables, should also be protected from lightning surges. In fact, good practice suggests that every conductor entering your shack should have surge protection. But in practice around here, very few of us take those extra steps and get away with it without problem.

You can see what these devices look like as we have them at SARC's Operations & Training Centre. All the coax and the rotator cables have surge protection at the box outside the window of the radio room, connected to ground by a heavy conductor.

Our ground system is comprised of 3 flat copper ribbons buried to a depth of >1m and connected to each other. The conductor is surrounded by bentonite clay pellets which, after wetting and swelling, provide a good electrical contact with the earth.

3. The 3rd is the **RF GROUND**, which is best discussed more productively in the context of antennas. Not all antennas require grounding to operate properly and that applies especially to balanced antennas like dipoles. Unbalanced configurations like ground planes and end-feds usually do because the ground is part of the antenna. But that's a topic for another time.

Good grounds are often difficult or impossible to achieve, especially if you are on a second or higher floor of a building and are distant from actual earth. A long ground wire can sometimes act more like another antenna rather than a ground and may do more harm than good. So keep the wire as short as possible and use a large gauge of wire.

Sometimes you have to experiment with grounds to find out what works, especially in the context of high swr on your antenna, or RF in the shack. You will know if you have RF in the shack because you may get erratic operation of electronic devices and/or an RF shock when you touch metal equipment. If that happens, you need to analyze the source of the problem.

In the old days, we would connect our equipment to a copper water pipe but of course nowadays most piping is plastic so that doesn't work. So you will have to run your own ground wire outside and connect to a ground rod.

For grounding, most of us use a conventional 5/8" diameter 8 ft. long copper plated steel rod designed for electrical service. Because our soil in Surrey is so stony and hard and it can be almost impossible to drive it into the ground, many will use a buried galvanized plate buried at shallow depth. Either way is acceptable.

Even more important than having a good earth connection is to bond all your radio equipment and accessories together to a common point with a heavy conductor so that it is all at the same potential with respect to your antenna or any RF which may be present in the shack. For this purpose, I like to use the copper braid removed from old coax because it is flexible and has a large conducting area.

In my shack, I have a 4 ft. piece of ½ inch copper pipe on the bench behind the radio and all equipment is bonded individually to it using copper braid and hose clamps.

If you have an earth ground specifically for your radio equipment, according to the Electrical Code all grounds are supposed be connected together. That can present a problem if your electrical ground is physically distant from your antenna or station ground, as it is at my station. But to satisfy the Electrical Inspector I did run a #6 copper conductor under the ground from my tower ground to my service ground, a distance of 100 ft. approx.

If you want to read more on grounding I recommend starting with ARRL publications, but a Google search will bring forth many others.

~ John VA7XB

Does a Coil of Coax affect antenna SWR?

Good, or bad?

By JOHN SCHOUTEN VE7TI

John Schouten VE7TI is an instructor with Surrey Amateur Radio Communications

I recently received a question from a new ham. He was installing an antenna and had purchased a 100 foot roll of coax. This was much more than actually needed so the question was: "Can I just coil this up in case I want to move the antenna and transceiver further apart later?"

No, other than as a choke at the antenna, you should not. The addition of a coil of coax can not only result in greater signal strength losses, but also affect antenna SWR (Standing Wave Ratio) by introducing impedance changes. It's crucial to carefully design and tune a coil to minimize SWR alterations.

Why does a coil of coax affect antenna SWR?

A coil of coax affects antenna SWR due to its impedance characteristics. The coil introduces inductance, altering the overall impedance of the transmission line. This change can impact the matching between the antenna and the transmission line, leading to shifts in SWR. Properly designing and tuning the coil helps minimize these effects and optimize the overall system performance.

SWR is a critical parameter in radio frequency (RF) systems, indicating how efficiently power is transferred from a transmitter to an antenna. Achieving a low SWR is essential for maximizing signal strength and minimizing signal reflections. One factor that can influence SWR is the presence of a coil of coaxial cable in the transmission line.

Transmission Line Impedance

Coaxial cables are characterized by their characteristic impedance, typically 50 or 75 ohms. This impedance is crucial for efficient power transfer along the transmission line. When a coil is introduced into the coaxial cable, it adds inductance, thereby altering the overall impedance of the transmission line.

Inductance and Impedance Matching

Inductance, represented by the symbol 'L', resists changes in current flow. The introduction of a coil increases the inductance in the transmission line, affecting the impedance. Impedance matching between the transmission line and the antenna is crucial for minimizing signal reflections. Any deviation from the characteristic impedance of the line can result in a mismatch and contribute to an increase in SWR.

Reflections and SWR

SWR is a measure of the amount of power reflected back from the antenna due to impedance mismatches. When a coil is added to the coaxial cable, it can create impedance discontinuities, leading to reflections. These reflections contribute to variations in the voltage standing wave along the transmission line, causing an increase in SWR.

Why a Coil of Coax cable is added to an antenna as a choke

A coil of coaxial cable is added to an antenna as a choke to suppress common mode currents and minimize radio frequency interference (RFI). This coil, also known as a balun (balanced to unbalanced transformer) or RF choke, serves several purposes:

Common Mode Currents

Common mode currents occur when RF energy travels back down the outside of the coaxial cable (shield) instead of flowing through the inner conductor. This can lead to undesirable effects such as RF interference and unbalanced radiation patterns. The coil disrupts these common mode currents, preventing them from affecting the antenna's performance.

Balancing the Antenna

The coil helps balance the antenna by preventing the feedline from becoming part of the radiating system. In cases where the antenna is designed to be fed with a balanced line (e.g., ladder line), the coil transforms the balanced signal to an unbalanced one suitable for coaxial cable.

RFI Reduction

By acting as a choke, the coil suppresses unwanted RF currents on the outer surface of the coaxial cable. This helps reduce the risk of interference with nearby electronic devices and minimizes the potential for the coaxial cable to act as an unintended part of the antenna system.

Enhancing the Radiation Pattern

Suppressing common mode currents and maintaining a balanced feed can contribute to a cleaner radiation pattern for the antenna. This ensures that the radiated energy follows the intended pattern, improving the antenna's overall efficiency.

Cable Decoupling

The coil acts as a decoupling element between the antenna and the coaxial cable, preventing the cable from affecting the antenna's tuning or performance.

In summary, a coil of coaxial cable added to an antenna as a choke serves as a valuable tool for maintaining proper antenna characteristics, reducing interference, and ensuring efficient RF signal transmission.

If I'm putting in a choke, where does it go?

A coil of coaxial cable is often added in the transmission line just before the antenna. By preventing common mode currents, the choke helps minimize radiation from the transmission line itself. This ensures that the majority of the RF energy is directed towards the antenna, improving overall transmission efficiency.

Some installations may require measures to reduce unwanted radiation and interference, and adding a choke in the transmission line helps meet regulatory standards and minimize the impact on other electronic devices.

Bottom line… trim that coax to length but add a few turns as a choke at the antenna if you wish.

~ John VE7TI

Projects

The Power Gate revisited: Keeping the current flowing

by JOHN SCHOUTEN VE7TI

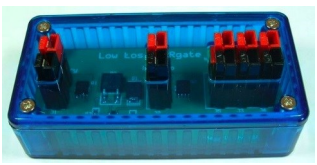
John Schouten VE7TI wrote an article on the subject for the November 2015 Communicator. While the commercial alternatives are good, they tend to be pricey. Here is an option for less than $10

In the September and October 2015 issues of the SARC Communicator, we featured circuits that will provide you with a reliable, robust power source. In September it was Hiu Yee VE7YXG's simple Gel-Cell Battery Charger, and in October John Brodie VA7XB's low cost Battery Monitor Project. This issue we'll look back on this series to see what, if anything, has changed. There are devices that will automatically switch your station to battery power if the AC fails, and switch it back when the power comes on. The possible solutions range widely in price.

First, lets look at the commercial alternatives. There are a number of solutions on the market including one, quite expensive, at US$140, known as the West Mountain PwrGate. This device uses solid state devices to charge and automatically bring a backup battery online if there is a power outage, and switch back to the power supply if AC is restored.

You will note that the PwrGate above is housed in a large heat sink. This device used Schottky diodes which can generate significant heat. Those fins are there to dissipate that heat. Heat is wasted energy, so we look at an alternative device that is more efficient.

The **Low-Loss PWRGate** is billed as being simple, safe, and reliable, and easily able to add backup battery power to your home station or go-kit. The Low Loss PWRgate uses MOSFET power transistors to switch the load between power sources with less than a 20 miliVolt drop, much smaller than systems that use Schottky diodes. This keeps the power losses to a minimum and delivers full battery power to the load. The device is rated at 25 Amp total, with 3 power outlet ports, ARES standard Anderson Pole Connectors, 3 ozs, and US$84.95 plus shipping by USPS Priority mail. Note that there is no heat sink here, and it does not charge the battery. The distributor, Flint Hills Radio Inc. will also sell you a solar battery charge controller for US$ 74.95 plus shipping.



A relative newcomer since the last article is the Chunzehui PWRpath F-1006. Its design is based on a switching circuitry using low loss MOSFETs (with a negligible insertion resistance of merely 0.0023 ohms). This means that you do not have to add heatsinks even for 30 Amps of continuous working current. The **built-in charger** keeps my 90 amp-hour gel battery topped up with a trickle charge unless more charging current is required.

The specs: Operating voltage: DC 5 ~ 28V, Quiescent current: < 2mA (at 13.8V), Max. continuous output current: 30A. Standard Powerpole connectors, and no wasted heat!

High quality aluminum enclosure, Overall Dimensions (maximum, w/o cables): 80mm x 62mm x 33mm / 3.15" x 2.44" x 1.30"

Includes: 3x black powerpole housings. 3x red powerpole housings. 3x PVC cover flame retardant sleeve. 6x silver plated copper 30A 14-12AWG powerpole contacts.

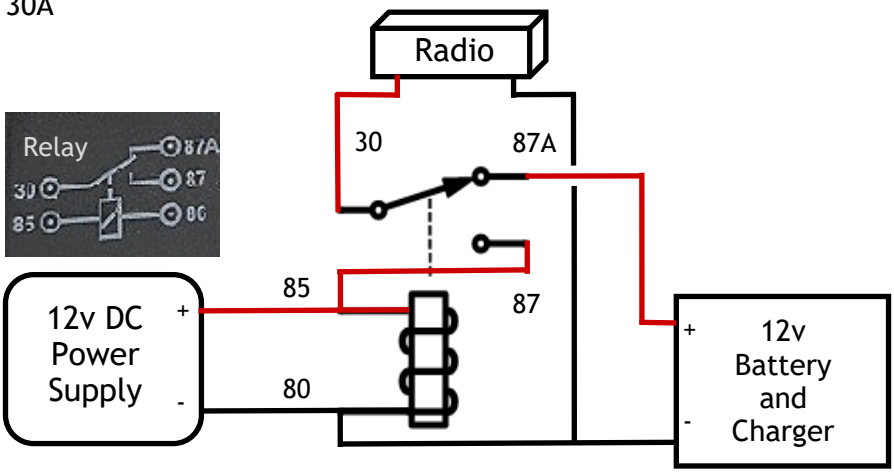
The cost… a pretty reasonable US$45 with free shipping in the US. Amazon.ca wants C$108.59 (not so cheap). I bought mine from AliExpress.com and paid C$55 with free shipping.

It has been in service for a while now and works just fine. But for the budget conscious it is still a bit of money, and makes our $10 projects seem pretty reasonable doesn't it?

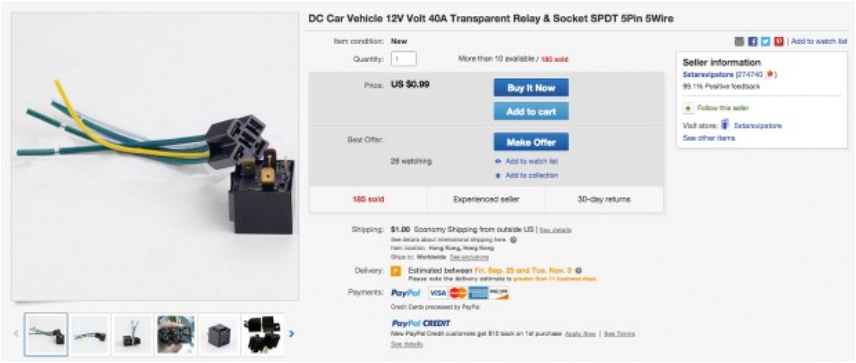
The budget solution

So back to the low cost alternative. This device transfers up to 40 amperes at up to 14 volts DC continuously. It is a safe way to connect both a 12 volt battery and a 13.8 volt power supply to a load, while electrically isolating both from each other. Whenever your power supply is on, the supply feeds the load, and if you add Hiu's or any commercial charger, will also charge the battery, keeping it healthy and ready for use when the power supply is off or loses AC power, all at a cost of about CA$10.00

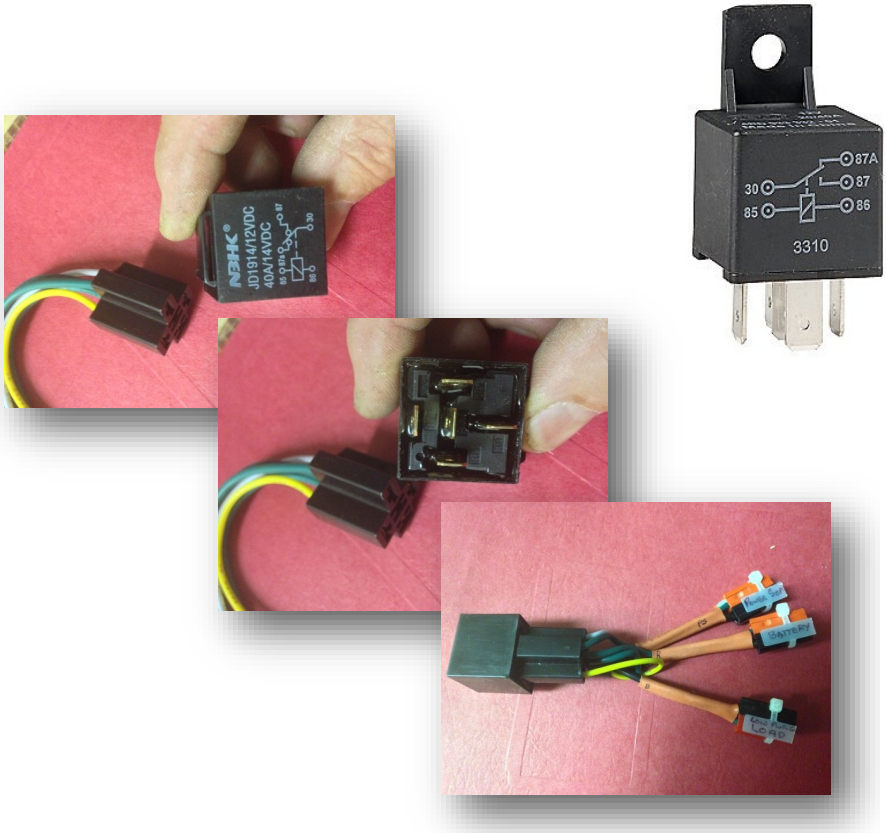
I did some time in the seventies as a service technician while in my early twenties. One of the products I had some exposure to was alarm systems. In those days before PWRgate, a simple single pole double throw (SPDT) relay was used for the same purpose. The relay is the same as used in many automotive systems. In this application, if the magnetic relay coil is activated, when normal power is on, the contacts switch in the power supply.



This inexpensive solution works well and I used it at my station for 8 years. The circuit diagram has only one component, the 12-volt automotive relay. If AC power is lost, the power supply no longer applies a voltage to the relay and the contacts open for the power supply, but close for the battery supply. When AC power returns, 12 volts returns from the power supply to switch the relay and turns off 12 volt battery power.



The eBay ad for the relays. Two, including sockets for US$ 3 shipped



Wiring is straightforward with a diagram of the connections stamped on the relay case. Join all the common (negative) leads together. I used standard Anderson PowerPole connectors.

If the power supply loses voltage, as in a power failure, the magnetic coil is no longer activated and releases the contacts, which then switch in the battery backup. The coil, now deactivated does not rob the battery of any current. A very simple solution with no loss through excessive circuitry or heat. The coil uses a bit of current from the power supply to remain activated, but this is minimal.

These relays are commonly available at auto supply dealers but I ordered mine through eBay and received two, with sockets and mounting brackets, for US$ 3 shipped. They are rated for 12-14 Volts DC and 40 Amps, more than enough to handle the current that most transceivers would draw.

Wiring is fairly straight forward and the circuit is right on the relay housing. The numbers correlate to the marked pins sat the bottom. I used three sets of Anderson PowerPole connectors. One for the battery, one for the power supply and one set for the load, being my transceiver. A numbered connection diagram was stamped on the top of the relay I received. The relay coil is wired in parallel with the power supply. If the power supply is on, the relay keeps it feeding the supply circuit. If the power supply goes off current is diverted from the battery.

Once I figured out the contact layout, the actual construction took me only about half an hour, definitely something that can be tackled even by a beginner. Pair this with Hiu's charger and John's low voltage alarm and you're good to go uninterrupted if the power goes out.

~ John VE7TI

Solder Seal Connectors:

A Revolution in Wire Connections

by JOHN SCHOUTEN VE7TI

Solder seal connectors, also known as solder seal heat shrink butt connectors, are innovative devices that have revolutionized the way you can connect wires. These connectors provide a simple two-step connection of wires, eliminating the need for a separate soldering and sealing process. I bought mine from AliExpress and I can vouch that they really work.

How They Work

The solder seal connectors are essentially glue impregnated, shrink tubing in-line connectors with built-in solder. When heat is applied, the glue and solder melts and flows through the inserted stripped wires, ensuring a strong, insulated seal. This process does not require a soldering iron, making it a convenient and efficient solution for wire connections.

These connectors are available for different wire gauges, including 12-10 AWG wire (Yellow), 16-14 AWG (Blue), and 22-18 AWG (Red). This variety allows for a wide range of applications, from home wiring projects to electronic repairs.

Advantages

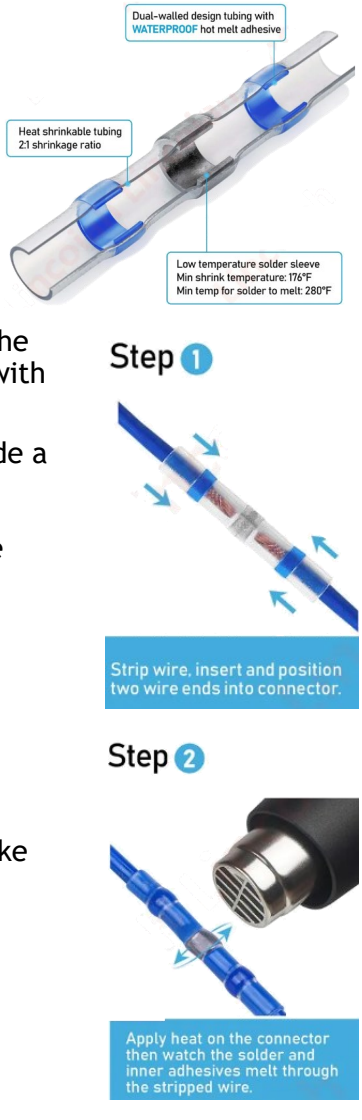
One of the main advantages of solder seal connectors is their ease of use. You will need a heat source capable of reaching 750-1000° F., but the two-step process simplifies the task of joining wires, even to those with limited technical skills.

Additionally, these connectors provide a secure and durable connection. The solder ensures a solid electrical connection between the wires, while the glue in the heat shrink tubing provides insulation and strain relief.

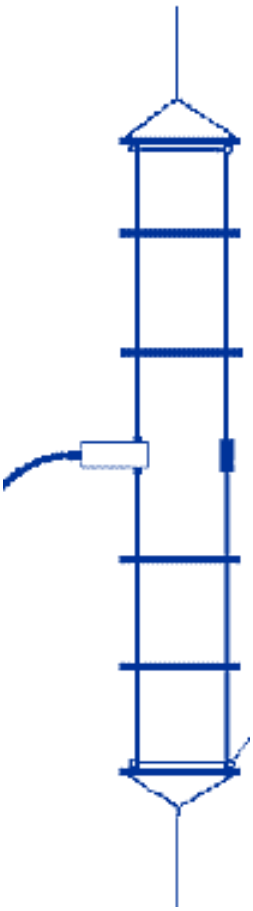
Solder seal connectors are a game-changer in the field of electrical connections. They offer a simple, efficient, and reliable solution for connecting wires. Whether you're a professional technician or a DIY enthusiast, these connectors can make your work easier and more efficient.

Read more at https://www.popularmechanics.com/home/a45865188/solder-seal-connectors/

~ John VE7TI



A description of the solder seal connector, the steps and the final result.



Antenna Adventures

T2FD - The Forgotten Antenna

by GUY ATKINS

Guy Atkins wrote an article on this antenna many years ago, It is being resurrected as a workable option.

Although this is a vey well-established and much written-about antenna, this article first came to our attention in The Georgian Bay Amateur Radio Club's January 2024 'FEEDBACK' newsletter.

If a survey were taken of all shortwave DXers to find the antennas they use, I suspect the majority would be found using the random wire. Next In popularity would likely be the commercially available sloper antennas and trap dipole.

However, an antenna's popularity does not necessarily reflect excellent performance. While being simple and inexpensive to erect, the randomwire is susceptible to electrical noise, and presents a wide range of impedance to the receiver, depending on received frequency.

The terminated. tilted, folded dipole (T2FD) is a little known antenna that performs excellently. Compact in size compared to a half-wave dipole (approx. 67 feet long at 60 meters), the T2FD provides signal gain, wide frequency coverage, and exceptionally low noise characteristics.

An early discussion of the T2FD appeared in the June 1949 issue of QST, a popular magazine for radio amateurs. A more recent article on the T2FD appeared in the May 1984 73 Magazine.

The World Radio Television Handbook for 1988 gave a brief description and diagram of the T2FD, and that year's WRTH Newsletter provided additional construction information. Further details were given in the 1989 WRTH. However, some misleading and incomplete information is given in these WRTH sources, which this article will later clarify.

DESIGN

Some have called the T2FD a "squashed rhombic" antenna. It does bear some design similarities to the non-resonant rhombic, but theoretically it is admittedly inferior. However, the T2FD performs well in a modest amount of space, while a rhombic antenna can be immense - virtually impractical - at all but the highest SWBC bands.

The T2FD is essentially a closed loop design with the element ends folded back and joined by a non-inductive resistor (see figure below). The feed line can be 300 to 600 ohm twinlead or open line.

Because twinlead and open line can be affected by nearby metallic objets (downspouts, metal window frames etc.), a better feed line is coaxia1 cable connected to an impedance transformer (balun).

The T2FD has a characteristic 5 or 6 to l frequency ratio, which means that it works effectively from its low-end design frequency up to 5 or 6 times that frequency. For instance, the T2FD which I use is designed for optimum performance at 4.9 MHz, but can operate up to the 25-29 MHz range. In practice this antenna also works satisfactorily down to the 75 - 90 meter tropical bands, but not as well as a dipole or delta loop designed for 75 or 90 meters.

PERFORMANCE

The United States Navy conducted extensive transmitting and receiving tests of a single T2FD antenna in the late 1940s at Long Beach, California. They employed a Model TCC Navy I kW transmitter, with a frequency range from 2.0 to 18.0 MHz. After a year of use on all frequencies the T2FD was found to be superior to individual antennas on the various bands. The other antennas were removed from the Long Beach site affair the tests.

Similar results during the same period were experienced by the Kyushu Electric Communications Bureau of Japan. Their experiments indicated that the terminated tilted folded dipole was superior to the "zepp" and halfwave dipole types previously used. They noted wideband characteristics, and the T2FD gave a 4 to 8 dB signal increase at their various receiver site

My experience has shown the T2FD to be a fine performer when only a single shortwave receiving antenna can be erected, due to its wideband nature. It also has the advantage of electrical noise rejection (to a degree) compared to a random wire or even a dipole.

THE TERMINATING RESISTOR

According to the QST articles mentioned, the value of the terminating resistor is rather critical. Its value depends on the feedpoint impedance, and is normally above it. For instance, if 300 ohm feed line is used (or 75 ohm coax into a 4-1 balun) the correct termination value is 390 ohms. For 600 ohm feed line, a 650 ohm value is best. If a 450 ohm feed line is in use, the correct resistor would be in the vicinity of 500 ohms. I have not discovered why the optimum terminating resistance is higher than the feedpoint impedance, nor do I know of a formula for calculating this relationship.

The terminating resistance becomes more critical as the feedpoint impedance is lowered. With lines of lower impedance (including a directly connected 50 ohm coaxial cable), the value is critical within about 5 ohms. (The QST articles did not state an exact recommended value when using a low impedance line.)

The WRTH editions give the erroneous impression that T2FD antennas require a 500 ohm resistor and a 10:1 balun transformer, used with 50 ohm coax cable. This is not the case, although these values will work fine if you have the 10:1 balun available (normally hard to come by). A T2FD built with 75 ohm coax (RG-59 or RG-6), a common 4:1 balun, and a 390 ohm terminating resistor is recommended.

The resistor used must not be a wire-wound type, its inductance would affect performance to a substantial degree. A carbon resistor of

1/2 to 1 watt in size is perfect (for a receive only T2FD). The WRTH Newsletter in 1988 said that the wire for a T2FD must be made of pure copper between 3mm and 5mm thick In reality, the exact tbickness and type of wire have very little bearing on the T2FDs performance for receiving. Your main consideration will be wire strength, regardless of diameter.

CONSTRUCTION TIPS

A T2FD takes more hardware to construct than a typical dipole. Maintaining a uniform spacing between the parallel wires, as well as sturdiness, are the primary considerations. My first attempt at a T2FD self-destructed when the antenna was hoisted into the air. I underestimated tbe strain the wires would be under. My current T2FD has been in use for over 1-1/2 years, and was built with 14 gauge stranded, cold-drawn copper-wire.

The spacers or spreader bars ean be fashioned from 5/8" (minimum) diameter wood dowels, or even acrylic rod if available. Drill appropriate sized holes at eacb end of the spreader bar for the wire to pass through. The spreaders should be secured to the wires so that they do not slide; one method is to "jumper" each spreader end with a short piece of stiff wire and solder to the antenna wire.

It is essential that you encase the terminating resistor inside a plastic cylinder or other support, and weatherproof the assembly. Be positive that the resistor will not receive the strain from the wires.

I prefer to use eyelet bolts on the end spreader bars for tbe antenna wire to pass through. An alternative would be some type of rod or strong, small diameter tubing cut to the length of dimension "B". The wire would simply thread through the rod.

Most amateur radio supply stores sell 4:1 baluns tbat only need a wrap of "Coax Seal" around the connections to be totally waterproof. The type with a coax connector that will accept a PL259 plug is perfect.

The diagram illustrates this type of construction, using the commonly available 4:1 balun, 390 ohm resistor, and 75 ohm RG59 coaxial cable.

On the following page is a comparison of a 60 meterband T2FD, a 500 ft. longwire and a 50 ft. random wire antenna.

The formulas for calculating T2FD dimensions are as follows.

1. The length of each leg ("A") from the center is equal to 50,000 divided by the lowest desired operating frequency (in kHz) and then multiplied by 3.28. The answer is in feet.

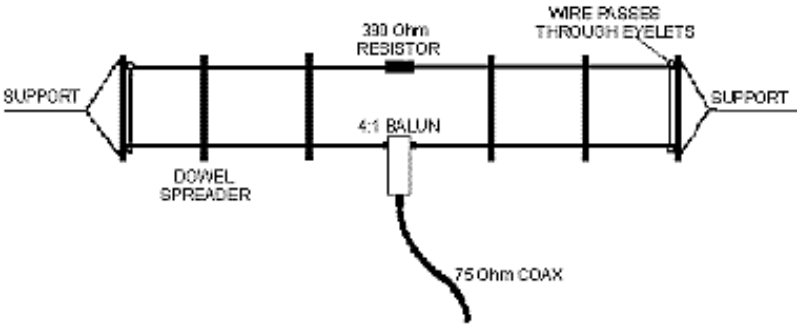
2. The spacing between radiating wires ("B") is equal to 3000 divided by the lowest desired operating frequency (in kHz) and then multiplied by 3.28. The answer is in feet.

3. The sloping angle for a non-directional pattern should be on the order of 30, but 20–40 is acceptable.

Example:
To design a T2FD for the center of the 90 meter band (3300 kHz) and up:

Total length of the antenna would be 99.4 feet (2 x 49.7), and the width would be 2.98 feet ("B").

Typical construction details for T2FD.
Actual dimensions calculated per formulas in article.



	Desired frequency	Spacing
Leg "A"	(50.000 / 3300) x 3.28	49.70 feet
Leg "B"	(3000 / 3300) x 3.28	2.98 feet

The total wire used to complete the loop equals 204.76 feet (4 x 49.7) + (2 x 2.98).

T2FD -- a match for any antenna

Tests were conducted at the home of Fred Carlisle, a DXer from rural Yelm, Washington. Nearby his home is a large dairy, whose processing equipment operates day and night and generates some amount of electrical interference. The noise was rarely audible on the T2FD, yet signal strengths were comparable to (or better than) the other antennas in use, on a range of frequencies:

The 500 ft. and 50 ft. antennas were switched in and out of the receiver's high impedance input, the T2FD fed the 50 ohm coax input. The receiver used was a JRC NRD525 with a custom, highly accurate analog S-meter. The meter is calibrated to the industry standard S-units/microvolts scale.

As the results show, the T2FD antenna did not begin to drop off in performance until down in the 120 meterband. This is well below the 60 meterband design frequency of this particular T2FD.

For further information, see:

[T2FD a match for any antenna -- antenna special on hard-core-dx.com]

T2FD excellent receiving antenna

Frank Gilmore, K0JPJ says: "I used a T2FD in 1961. At that time I had lots of land to experiment with antennas and each weekend the local gang would come over and we would put up another one.

W8JK antennas were my favorite wire antennas although they were rather awesome when built for 40... also had lots of wind resist. and the smallest ice storm would bring them down.

The T2FD gave a good accounting of itself. If I remember correctly I built mine from an article in either CQ or the CQ Antenna Manual. I don't recall it ever appearing in the ARRL Antenna Handbooks. It may have been in Bill Orr's Radio Handbook at one time.

It was an excellent receiving antenna for SWL use. After I dropped traffic nets and did little but chase DX on the higher freqs with a beam I used the T2FD on a Hammarlund HQ-180AXC to monitor commercial RTTY."

~ Guy Atkins

Reproduced from https://www.hard-core-dx.com/ in accordance with he conditions set down in the Design Science License

SARC Trello site

What is Trello? According to their website, Trello is the visual tool that empowers a team to manage any type of project, workflow, or task tracking.

We recently launched a Trello site managed by Reg VA7ZEB to receive ideas and to permit our members to see some of the issues and ideas that we are discussing.

You can visit the site at: ve7sar.net/brainstorm

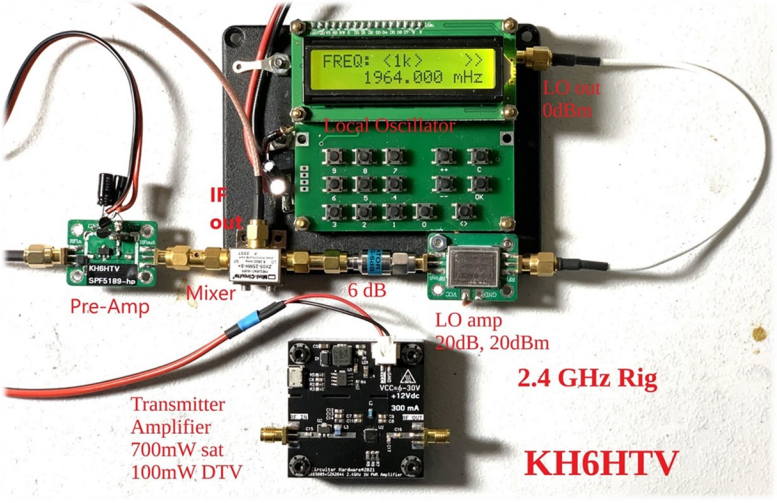
From the TV Repeater's REPEATER

An Inexpensive Amazon 2.4GHz, DVB-T Rig

Jim Andrews, KH6HTV publishes the Boulder Amateur Television Club free TV Repeaters Repeater newsletter via email. All past issues are archived at: https://kh6htv.com/newsletter/

I thought that I would share with our readers my low-cost approach to getting on the 13 cm (2.4 GHz) band. Perhaps this might help motivate others to also give it a try. The major cost item for DVB-T is the modulator. If we are already doing DVB-T on 70cm, we already own that. Most of us are using the Hi-Des model HV-320. It is extremely broadband with coverage extending from 100 MHz to 2.5 GHz. Thus, covering our first ATV bands of 70cm, 33cm, 23cm and 13cm all in one box. But it costs a stiff $400.

Transmitter: Because the HV-320 works up to 2.5 GHz directly, our transmitter situation is very simple. We only need to add an rf power amplifier as the "After-Burner" behind the HV-320. Here some googling the internet pays off. I found the



This photo shows my entire 2.4 GHz rig for DVB-T. All built from low-cost parts available from Amazon.

power amplifier shown in the below photo on Amazon for a low $30. It uses two MMIC chips. The driver amp is an SBB5089 while the final power amp is an SZA2044. The gain is about 40dB. Driven hard to saturation, I got 700mW out of it. Driving it with the HV-320's DVB-T signal and carefully adjusting the drive level I got 100 mW. (average) (+20dBm) out with very respectable -33dB shoulder breakpoints.

The amp pulls 260 mA at +12Vdc. The amp is also small enough, it can be mounted directly onto the 2.4 GHz antenna, thus eliminating any feed-line loss.

Receiver: For DVB-T receivers on VHF/UHF up to the 33cm band, many of us are using some very low cost (< receivers $50—*all prices quoted in US dollars*) found on Amazon, E-Bay, etc. (note: only for 6, 7 or 8 MHz BW). Above 1 GHz, our selection for DVB-T is quite limited. At present, the best choice is probably the HiDes model HV-122A at $330. It is a dual-diversity receiver covering 170 to 2700 MHz. Hi-Des also offers a lower cost receiver, their UT-130 which covers 100 - 2600 MHz and costs $200. But it is strictly a USB receiver and requires an external PC computer. Hi-Des previously offered the HV120A with broad frequency coverage up to the 2.4 GHz band, but they no longer offer it for sale.

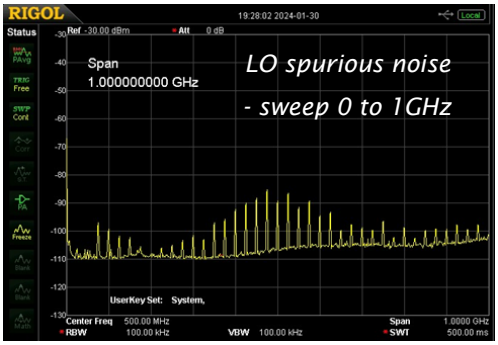
Personally, for DVB-T receivers, I only have the Hi-Des HV-110 and GT-Media V7 Pro. Both only work up to the 33cm band. So, for microwave work above 1 GHz on 1.2 GHz, 2.4 GHz, and higher, I need receiving down-converters.

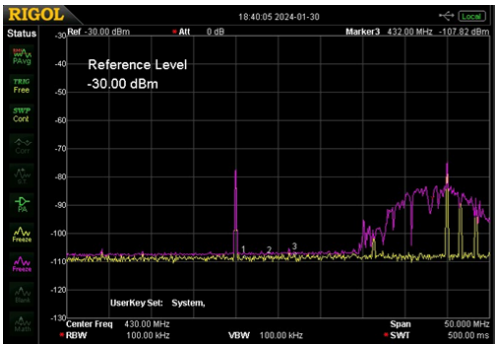
Mixer: The basic receiving down-converter consists of just a mixer driven by a local oscillator with the IF being in the range of my basic DVB-T receivers. The photo above shows my complete, low cost, 2.4 GHz down-converter. The mixer is a Mini-Circuits 25MH. It is a double balanced Schottky diode mixer with specs. of: RF/LO 5-2500 MHz, IF 5-1500 MHz, +13dBm LO drive, -7dB conversion loss. It costs about $55 from Mini-Circuits. I used it because I already owned it. The same mixer on Amazon is available in a pc board version with SMA connectors as a model ADE-25 for about $15-$20. I have tested it with the Amazon mixer and got identical performance.

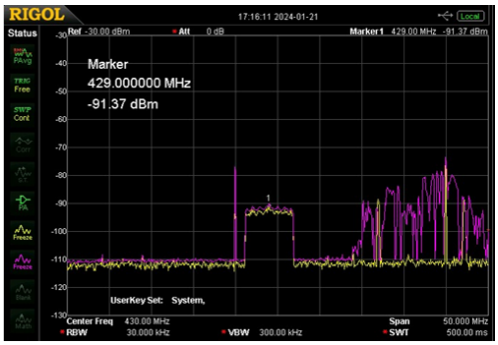
LO: The Local Oscillator (LO) is a frequency synthesizer using an Analog Devices IC, the model ADF-4351. It tunes from 35 MHz to 4.4 GHz. It is available from Amazon, E-Bay, etc. in several different pc board and completed boxed configurations. The one shown above is the least expensive at about $30. It has a pc mounted keyboard for data entry and LCD display. The only drawback is the lack of a back-up memory. The desired LO frequency must be entered every time it is powered up. The rf output from the LO is about 1 mW (0dBm). This is not sufficient to drive the mixer which requires +13dBm (20mW).

To boost the LO drive power, I added a low cost, broad-band MMIC amplifier. It is shown in the photo labeled "LO Amp". It uses the SBB5089 MMIC. 20dB gain and +20dBm max. output power. +5V at 90mA. Also available as a low cost pc board with SMA connectors from Amazon for about $10. The rf output from this amp. is actually too high for the mixer at +20dBm, so an SMA, 6 dB attenuator is placed on it's output to drop the LO drive power back down to the recommended 13-14dBm. Good quality, SMA attenuators are also available from Amazon for about $6 each.

A mixer and LO are the minimum required components for a down-converter. Weak signal performance can be enhanced by adding a low noise pre-amp in front of the mixer. The one shown in the photo is still another Amazon item, available as a pc board with SMA connectors. Also, about $10. This one uses an SPF5189 MMIC. The







Lower two graphics: IF Out - No input RF signal IF Out - 2.393GHz DVB-T signal, +20dB

gain is not flat but rolls off dramatically at high frequencies. At low frequencies it is about 30dB. At 2.4 GHz, it is about 10dB, but still sufficient to help the sensitivity. I modified my pre-amp to add a high pass filter to help reduce overload from much lower frequency rf signals. If desired, this pre-amp is also so small and light weight, that it too could be mounted directly at the antenna to eliminate coax feed-line loss.

IF: For my 2.4 GHz down-converter the RF input frequency is 2.393 MHz. I set the LO to 1.964 GHz which then gave an IF output on the 70 cm band at 429 MHz. I do need to mention that the RF output from the ADF-4351 is not perfectly clean. There is some low level "crud" which comes out in the few 100 MHz region which will disturb the ultimate sensitivity of the downconverter receiver.

This spectrum analyzer plot *[top left]* shows what came out of the mixer IF port as feed-thru from the LO. The top reference line is at -30 dBm, (10dB/div & 100MHz/div). The SA's noise level setting the bottom of the trace is at about -110 dBm. Obviously, some "birdies" to be avoided!

So it was necessary to carefully study on a spectrum analyzer the IF output to select an appropriate LO and IF frequency to avoid these "crudies". For my particular ADF-4351 and particular RF, I thus chose an LO of 1964 and IF of 429 MHz.

IF Out - No input RF signal IF Out - 2.393GHz DVB-T signal, +20dB These photos show the IF output on the 70cm band (center freq. = 430 MHz, span = 50 MHz). The yellow trace is a "live" sweep. The magenta trace is with the analyzer in the "peak hold" mode. What I noticed was the spikes on the yellow trace walked around quite a bit. So, putting the analyzer in peak hold I was able to capture where all they walked to and their strength. The photo on the left shows the 70 cm IF with no input 2.4 GHz signal. With this study, I was thus able to find the "sweet spot" quiet region to use as my actual IF frequency.

In this case I found channel 58 (426-432, 429 MHz center) to be quiet. Markers 1, 2 & 3 show Ch 58. The photo on the right now shows the IF output with a strong DVB-T signal on 2.393 GHz. In this case, it was set to be +20dB above digital threshold.

So, how well did this down-converter perform? I set up my HV-320 as my test source with the most aggressive digital parameters possible (6 MHz BW, QPSK, 1/2 FEC, 1/16 guard, H.264, 720p, 3.2Mbps). A good receiver will work with these parameters down to a digital threshold signal to noise ratio of a low 5 dB. Using my HV-110 as my calibrated receiver, I found the digital threshold to be 85dBm using the mixer alone. Adding the 10dB pre-amp, the sensitivity dropped to -94dBm.

Yagi Antenna: Again, Amazon to the rescue. While I have a BIG, BBQ grill dish antenna for 2.4 GHz, it is big, bulky, and unwieldy to maneuver and aim. A smaller, light weight Yagi would be nice to have also. What I found on Amazon works perfectly. Plus, it only cost $35. It is a very rugged Yagi made by the Chinese company Tupavco. It is the model TY-24-117-20. It is specified to work over 2.4 - 2.483 GHz with < 1.5:1 vswr. Gain = +17dBi. 18dB F/B, 25o beam width, 100 watts max., 35" boom, rear mount, with type N connector pigtail.

BONUS -- 23cm, 1.2 GHz Rig! Surprise! You can also use this same rig on the 23cm band with no modifications except to change the LO frequency. Essentially identical performance.

Transmitter: The rf power amplifier also works well on the 70cm and 23cm bands, in addition to the 13cm band. On 1.2 GHz, it had a bit higher gain. The max. saturated output power was 500mW. In DVB-T service, I got +19dBm (average). At 430 MHz, the max. saturated output power was 400mW and for DVB-T, I got +16dBm. -- Such a bonus for only $30!

Receiver: For my desired rf frequency of 1243 MHz, the IF "sweet spot" I found free of "crudies" was TV channel 9 (189 MHz). Thus, the LO frequency chosen was 1054 MHz. For this I found the receiver sensitivity was -86dBm for the mixer alone, or -96dBm with the pre-amp / mixer combo. Note, the SPF5189 pre-amp has more gain (15dB) at 1.2 GHz.

Well, I hope I have encouraged some of you ATV hams out there to thus venture a bit higher in frequency than just the 70 cm band. With Amazon's help, you can move up to the microwave region with just a few bucks' investment.

73 & Great ATV microwave DX de Jim, KH6HTV, Boulder, Colorado

~ Jim Andrews, KH6HTV, e-mail: kh6htv@arrl.net,
303-594-2547

Reproduced with permission from the TV Repeater's REPEATER — February, 2024 issue #154

Daniel Romila VE7LCG

Daniel's Workbench

ATU-130 Automatic Antenna Tuner

A review of a good budget tuner

by DANIEL ROMILA VE7LCG

Daniel Romila VE7LCG reviews an inexpensive antenna tuner that works well.

I have a cheap quad band transceiver, TYT TH-9800, which is only FM capable. I mostly use it on 29.6 MHz where, with the rated 50 Watts (actually 43 Watts), I constantly make contacts at over 4488 kilometers away, between Vancouver, Canada and Miami, Florida, USA. W4NMA, Mark Topley from Miami Florida, is always ready to confirm that he hears me there almost every morning, and he is amazed that I am often heard 5-9 although I only have a telescopic balcony antenna, 2.5 meters long, tuned with a NanoVNA. The telescopic antenna can be extended to 4.7 meters long, but I lose tuning, while I pretty much would want to use all its length.

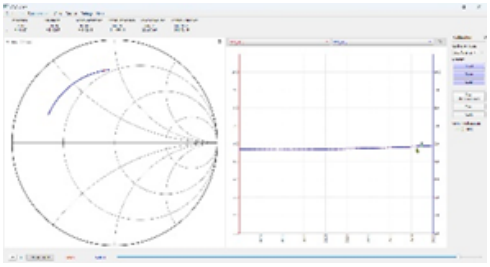
This is how I got to the ATU-130 solution, to insert an automatic antenna tuner between my TYT TH-9800 transceiver and the antenna.

On the next page you can see all the equipment I use nowadays - nothing fancy. The two walkie-talkies are in the picture because they have to stay somewhere, and my space on the desk is limited. I live in a small apartment building.

The ATU-130 is capable of tuning antennas from 1.8 MHz to 50 MHz. I verified and it tuned on 52.525 MHz, without any problems. The specifications, in detail, are at the end of the article. Before buying the

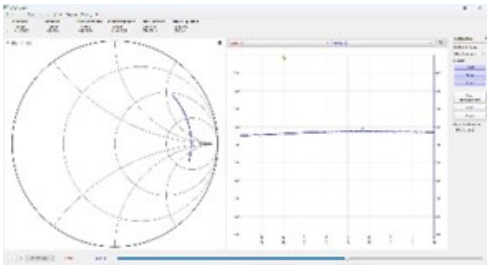
product, I contacted the seller and asked for a manual. I got it almost immediately – of course – in Chinese. What did you expect? I made an automatic translation to English, and it is OK.

Once I got the tuner, I installed it immediately, and I want to show you "the beef", in images. I did not even peel off the protective film from the LCD display. The results are displayed below and on the right. I also used my trusted NanoVNA S-A-A-2, v2.2, tethered to a Windows 11 PC, with the vnaQT program.

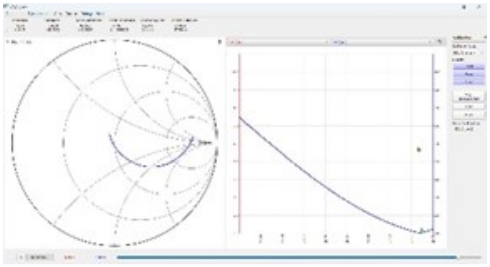


10 meter band, no tuner

I was targeting tuning on 29.6 MHz. With the antenna fully extended, the nanoVNA measured it as having a SWR above 5.5 throughout the 10 meter band. I inserted the tuner between the antenna and NanoVNA, and put the tuner in the BYPASS position. The measurements became even worse, with a SWR above 6.5 in the whole 10 meter band. This was not something that I wanted to connect to the transceiver, because the reflected wave would jeopardize my final RF power transistors. I put the ATU -130 in the TUNE position, and continuously transmitted FM. I heard the internal relays for several seconds, and what I obtained on the ATU-130 display is:



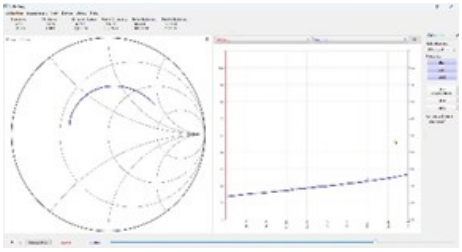
10 meter band, with tuner in BYPASS position



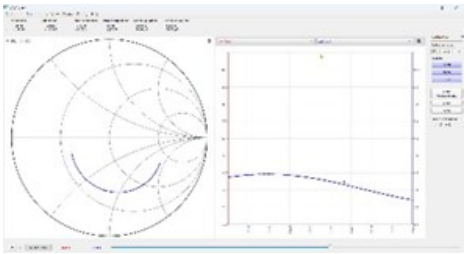
10 meter band, with tuner in the TUNE position

The measurement of the power is not exactly accurate (10%), and it is rounded, without a decimal. Keep this in mind when looking at the above values, and accept them. So, I can count on 43 Watts, having a SWR of 1.00 with my fully extended telescopic antenna, 4.7 meters long, on 29.6 MHz.

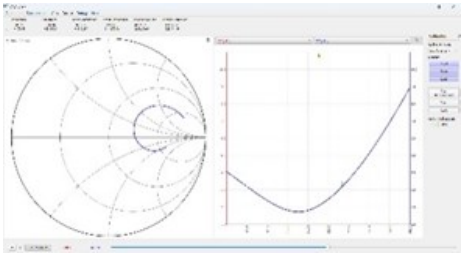
I disconnected the transceiver, and instead connected the NanoVNA. I obtained the graphic on the lower right from the 3 graphics on this page. As you can see, the tuner remains in the circuit not only during the transmission, but also during the reception, where it acts like a filter. Not bad. The SWR in the graphic, measured with the NanoVNA, is 1.05.



6 meter band, no tuner



6 meter band, with the tuner in BYPASS position



6 meter band, with the tuner in TUNE position

I am pretty excited about such good results with my cheap ATU-130 automatic antenna tuner. In a moment of excessive enthusiasm, I tried to tune in the 144 MHz band, although the tuner clearly lists the 50 MHz band as its limit. Do not do it. The tuner immediately shut off, and I was afraid I damaged it. But it worked OK again after powering OFF and ON again.

I repeated the 29.6 MHz measurements for the frequency of 52.525 MHz—graphics left.

On the lower left graphic, somehow my NanoVNA shows the tuner missed, and tuned somewhere lower. It probably did not, because it matched to my TYT TH-9800 transceiver, which has a different inductance/capacitance characteristic in the 6 meter band than my NanoVNA has. On the screen the ATU-130 shows:

Based on the fact that I reached repeaters with a dedicated antenna for the 6 meter band before receiving this tuner, now can I also reach the same repeaters with a longer antenna at 3.31 SWR on 52.525 MHz, when tuned with the ATU-130, even when at lower power (it is a longer/better antenna). I tend to believe the ATU-130 display, and I explained why there is no contradiction between what the NanoVNA shows and what the ATU-130 shows, because the measurements are done for different impedances.

I bought the ATU-130 for $109 CAD (= 81 USD = 75 EURO = 1529 ZAR), shipping and taxes included, in February 2024. I have the black version, which requires 10 Watts or more for tuning. The blue tuner is more suitable for QRP. Since the user manual is very short, I'll quote from it:

This device contains a set of 7 inductors and 7 capacitors that effectively cover the wideband amateur radio shortwave range from 1.8 MHz to 50 MHz.

- Connect to the antenna, the power plug (12~15VDC) and the transceiver. Turn on the power of the shortwave transceiver and the power of the antenna tuner. The self-test of the equipment shows that it is normal.

- Adjust the shortwave transceiver to the working frequency, set the working mode to AM, FM, CW, or FT8, RTTY and other modes (modes that can provide continuous carrier waves), press the shortwave transceiver transmit key or CW key to trigger transmission. At continuous transmission of 10W power or more, the tuner starts to adjust automatically. When the standing wave is less than 1.5, the tuner automatically stops tuning.
- At this time, at the current frequency point, change the shortwave transceiver to the mode where it will work, and you can use it with high power.

- When switching frequency bands, you need to perform the tuning operation again.
- If the tuner is tuned but fails to reach within 1.5, you can press the TUNE button to reset the tuner and repeat the above tuning process again until the standing wave reaches SWR within 1.5.

Possible problems and solutions:

- If it is still not tuned, the impedance of the antenna system may be beyond the tuning range of the antenna system, or the grounding should be checked.
- If the antenna tuner has no tuning action: Check that the connecting cable is well connected to the transceiver, whether the antenna tuner is in automatic mode, whether the shortwave transceiver is in the correct mode, and whether the tuning power reaches the triggering condition (for ATU-130 blue greater than 5W, for ATU-130 black greater than 10W, but should not exceed 20W).

When the antenna is not tuned or the standing wave does not reach 1.5, do not transmit with high power, otherwise the equipment may be damaged!

The automatic operating mode offers the user a unique opportunity to use the device without pressing buttons and connecting any external controls. The algorithm uses the following method: Tuning mode is activated if the current SWR exceeds 1.3 and has changed to (1.3-1) relative to the value recorded after the last tuning process.

When the unit is powered on, quick test mode is activated by pressing the three buttons Tune, Bypass and Auto. In this mode, the device powers all relays, which allows you to quickly identify faults related to transistor switching or soldering faults.

When the unit is powered on and the BYPASS and AUTO buttons are pressed, the unit enters simple test mode. In this mode, you can manually change the value of the capacitor or inductor using the Bypass and Auto buttons in a step-by-step manner. A long press on the Tune button selects the current element to be moved, a short press changes the capacitor. In this mode, input power and SWR can be measured online. The entire process is accompanied by clear instructions.

Technical characteristics

- Permissible supply voltage range: 10-15 V DC
- Maximum current consumption: 500 mA
- Maximum operating power: 150 watts
- Maximum possible measured power: 200 watts
- Minimum power required to start tuning: 5W (ATU-130 Blue 5W, ATU-130 Black 10W)
- Minimum possible measured power: 0.1 Watt
- Measurement steps for power up to 10 watts: 0.1 watt
- Measurement steps for power above 10 watts: 1 watt
- Power measurement accuracy: 10%
- Maximum installed inductance: 8.53μH
- Minimum installation step of inductor: 0.05μH
- Maximum installed capacity: 1869 pF
- Minimum capacitor installation step: 10 pF
- Typical consumption 200-300 mA

~ Daniel VE7LCG

Daniel's Workbench

A Quick RF Choke

For A Transceiver

by DANIEL ROMILA VE7LCG

Daniel Romila VE7LCG with a quick solution for eliminating interference.

My quad band transceiver, a TYT TH-9800 gave me big satisfaction, like talking on FM with Florida and California, with just 50 Watts and a telescopic balcony antenna, from an apartment building. I have a small space, and this transceiver affected my other equipment only when using it on the 10-meter band. I suspected some frequencies were radiating from it, just enough to disturb my desktop all-in-one computer located next to it. To be honest, I also have a fan with remote control that sometimes starts suddenly when pushing the transmit button. It is enough of a very, very small emission from my transceiver, well under the allowed spurious radiation, even well under 1 milliwatt.

The problem was a current kind of problem and could be solved by putting an RF choke immediately at the antenna connector of my transceiver. There were many solutions, all involving buying something, and waiting for it, to see if it worked or not.

While meditating about those aspects, I launched a CQ on 29.6 MHz, and my computer froze. The only way to make it functional again was to switch the computer OFF, and back ON. It was annoying. I need the computer to look on qrz.com for my contact and his/her location. I did not have any toroids big enough to pass the coaxial cable together with its PL259 male connector through, because I

tried to avoid desoldering and resoldering the connector back on.

I first tried a simple solution, and I prototyped the choke shown on the left.

It worked. Even when I put it very close to the fan that started in the past when transmitting, as if I had used the remote control. The problem had disappeared. I used the metallic tube from a vaping device. While I do not use these devices myself, I find plenty of them all over on the street, and I recover them in order to recover the LiPo rechargeable batteries from them.

I only cared that they had the correct diameter to wind an RF choke on them. I used the available space for more coax cable spirals. The challenge is to have everything stay in place after making the choke. I used yellow duct tape.

It does not look very nice, but it does not use an external box, just the coaxial cable that has to be connected to the transceiver for the antenna anyway, and HEY!… it did not cost me a dime.

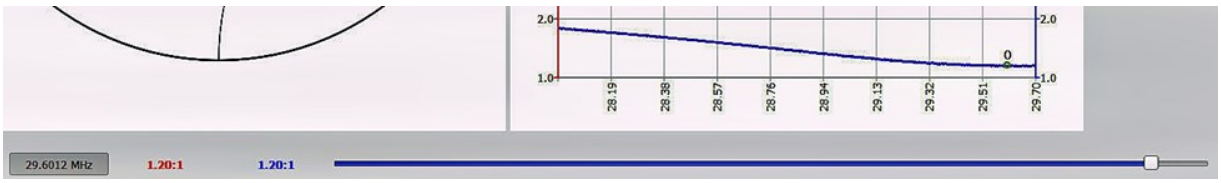
I had a problem and I solved it immediately, without spending anything and without any waiting.

I verified whether it affected my SWR for the only band I work in HF, the 10-meter band. Actually, even there I use only the 29.6 MHz frequency. I verified that the SWR was as it was before, favouring 29.6 MHz:

I use a telescopic balcony antenna. 1.2 SWR at 29.6 MHz was what I had before, with exactly the same shape of the SWR curve in the band. Here is how the RF choke looks now, at the back of my transceiver. It is so efficient because it is connected immediately after the transceiver, with no other intermediate connectors, jumper cables and so on.

I might make a more esthetically pleasing version in the future, but I already know from my experience there is nothing more permanent than a temporary solution.

~ Daniel VE7LCG



Daniel's Workbench

A headphone adapter for a mono transceiver

An easy fix

Daniel Romila VE7LCG with an idea to improve your listening pleasure.

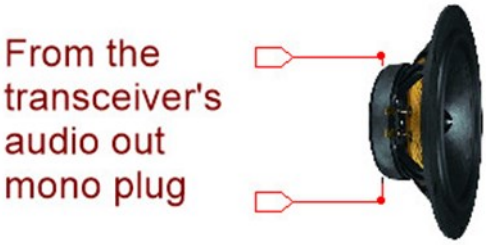
by DANIEL ROMILA VE7LCG

In order not to disturb my neighbors and my roommate I use headphones when watching movies and when I listen to music. I have several pairs of good quality over the head big headphones, with the active elements in them having 50 mm diameter speakers. I wanted to use the same big and comfortable wired headphones for the amateur radio transceivers I have too.

Unfortunately, most radio transceivers have a MONO audio output (plug on transceiver's plate), while the headphones are usually stereo. The transceiver wants to have the headphones connected to a MONO jack *(left)* while the headphones have a stereo jack *(right)*. As you can see from these two pictures, using stereo headphones, with their dual channel jack plugged into the transceiver's mono plug, would short one side of the headphones. I would listen only to the left active element of the headphones.

Usually, transceivers have a MONO out for connecting to an external speaker. That means it expects to see something connected with an impedance of 8 Ohms. There are not many headphones having such low impedance. The normal impedance for the active elements of headphones is 32 Ohms or greater, and when the left and right active elements are put in parallel

for MONO, the equivalent impedance is still high, 16 Ohm or more.



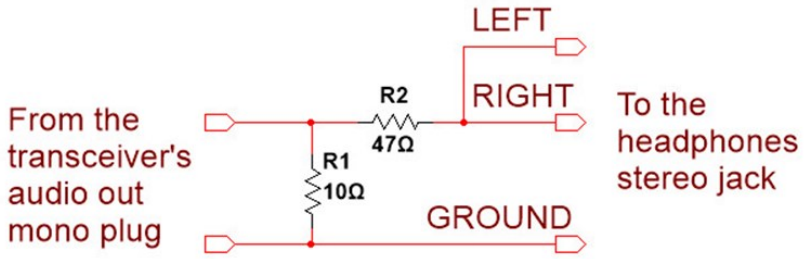
On the left I drew a clear schematic of an over the head headphones, in Multisim 14.3.

This computer program allows me to combine electrical connections with layers of actual pictures, and decide the order of schematic and pictures, which one to be in front of the other.

The simplest solution would have been to cut the stereo male jack off the headphones, and replace it with a mono male jack, where the LEFT and RIGHT sides of the headphones shorted. I could not decide which of my audiophile grade headphones I should sacrifice. I even bought some cheap headphones to sacrifice for this purpose, and still I could not decide to cut off the stereo connector.

I made an adapter, with the following schematic:

The simple connection between the headphones and the audio out from the transceiver did not bring good results. The sound was too loud, and the headphones picked up some noise. The transceiver also did not seem happy to see double than the required 8 Ohm load.



I wired R1, 10 Ohms in parallel with transceiver's output. The volume in the headphones was still too loud and difficult to handle from the transceiver's potentiometer, so I inserted R2, 47 Ohms in series.

I covered everything with shrink tube. I use the heating fan of my soldering station, and the result is a compact, stable adapter, which can be used with any of the stereo headphones I have.

Now I can do QSOs in style. Those big over the head headphones also act for noise canceling, passive noise canceling – but even active wired noise canceling headphones can be connected with this adapter.

~ Daniel VE7LCG

…more from

AnaSoft's SuperSpice

Free CAD for electronic schematics

by DANIEL ROMILA VE7LCG

Daniel Romila VE7LCG evaluates and experiments a CAD program that seems easy to use.

In July 2023 I was surprised to see a new version of a software that I used many, many years ago (somewhere around 1997 – 2000). I could not find anything on YouTube about AnaSoft's Super Spice, a computer assisted design program dedicated to electronics. It does not do PCBs. It is only for schematic capture and a simulator. It is ideal for hobbyists who generally do projects one of a kind, no mass production, and generally for experimenting and building just for fun.

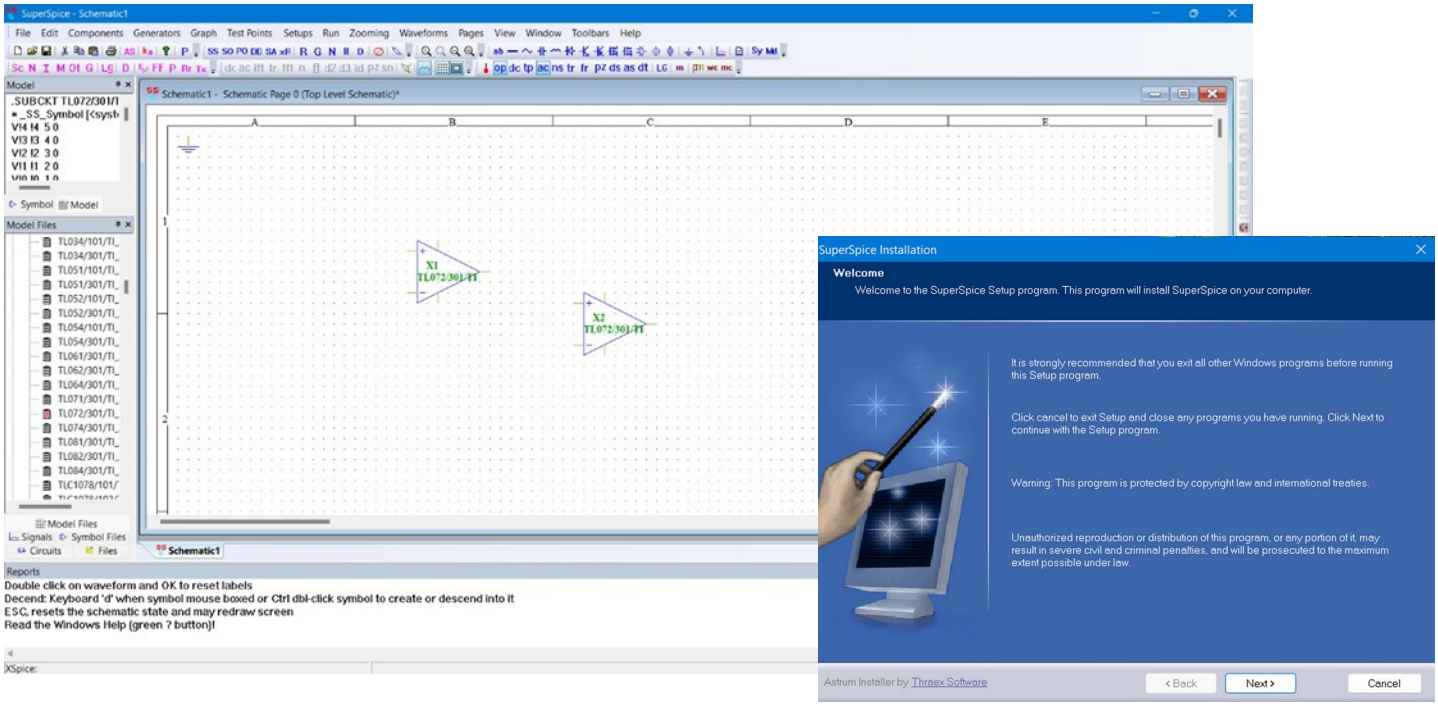
It can be downloaded for free from: https://www.kevinaylward.co.uk/ee/index.html It has a 64-bit, but also a 32-bit version.

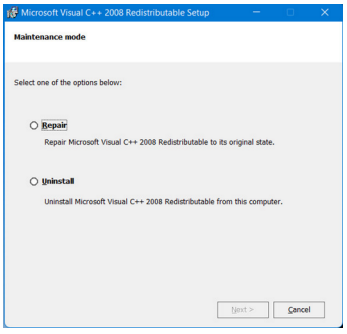
There are many "ANASOFTs" out there, so be sure to go to the above -mentioned URL to download SuperSpice. The author is Kevin Aylward, *[photo lower left]* an electronics engineer who is also a musician.

He has two patents for inventions and proclaims that: "My mission is to convince all of you CEOs/HR managers to offer me double what I am making now, in return for 10 times the productivity of your existing employees."

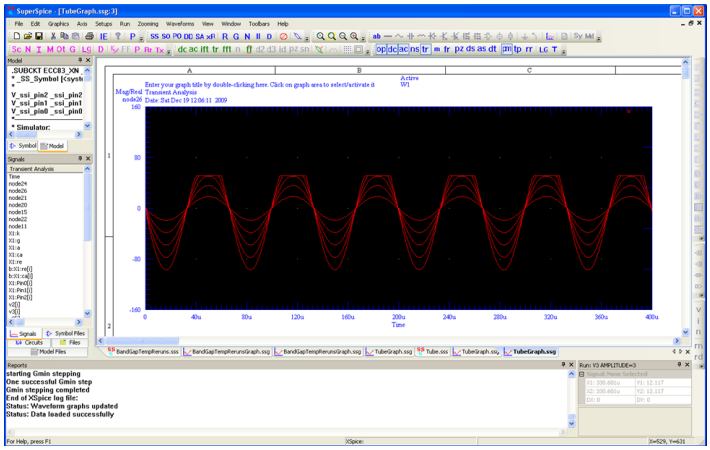
Installing SuperSpice is simple, and we are presented with a nice installation interface. The minimum required processor is a Pentium P166, and the computer must have – at minimum – Windows 95.

We are invited to repair Microsoft Visual C++ 2008, and it must be selected.





On some computers the program might give the warning about being "not digitally signed". The author declares on his website that he did not bother with it – which is fair – so one can safely go forward and finish the installation.



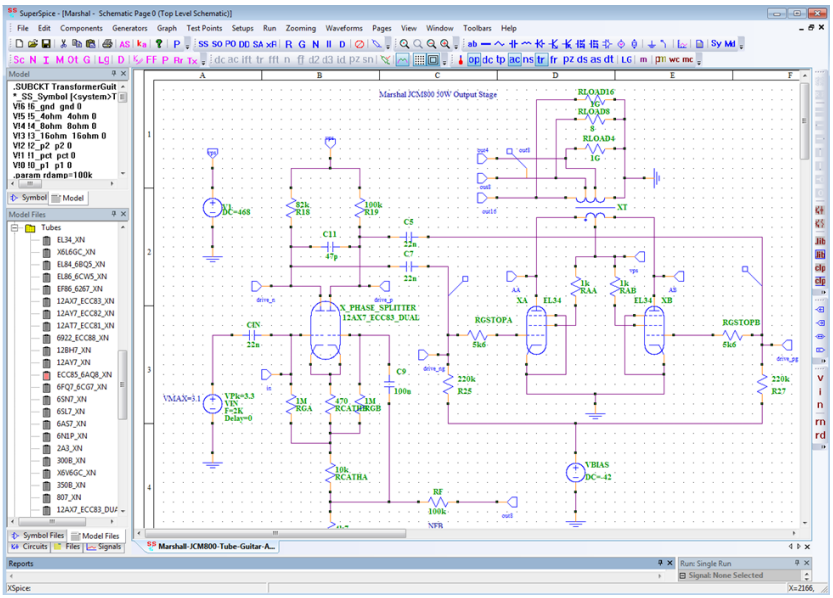
The program has an upper bar from which one can select the usual electronic components like transistors and diodes to place them into a schematic. The diodes are 1N4148 and the transistors are 2N3906 and 2N3904.

There are more extensive choices on the left side, where one can select components made by various manufacturers. On the upper left corner one can see the SPICE model and the symbol of the component.

Since I am used to National Multisim 14.3 and Proteus 8.16, both commercial dedicated computer assisted design programs for electronics, I did not want to learn too many details about other CADs and risk creating confusion for my own work when I do something.

The purpose of this article was not to be a tutorial for SuperSpice, but just to signal that there is another time proven program alive out there for drawing electronic schematics and simulations. There are tutorials on the website.

Being based on XSPICE as the simulation engine, one can add models, modify and so on. I am no longer familiar with the details of using this product (but I verified it – see the end of this article). SuperSpice looks like working with the more sophisticated QucsStudio or even KiCad. It is free and fast, with very low computer



requirements. From the author's website I copied screenshots that are publicly available at: https://www.anasoft.co.uk/screenshots.htm

There is a nice complex schematic, with tubes, on the same website, which can give a better idea what the program can do, better than my initial screenshot (made by myself after installing the program, verifying it is safe to install, and that it does what it says it does – otherwise I would not have written this article).

~ Daniel VE7LCG

Transistor arrays

There are still bargains out there

by DANIEL ROMILA VE7LCG

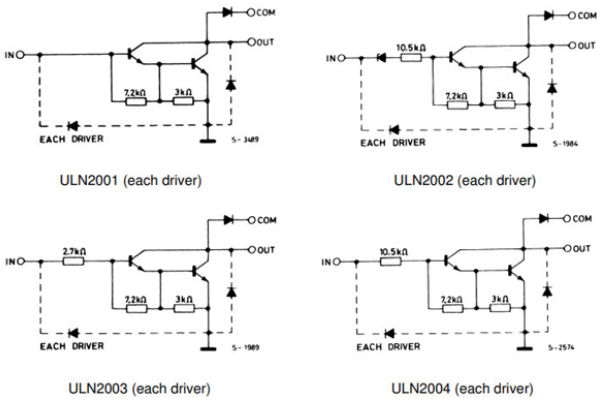
My interest in this subject was reignited in June 2023, when I found some integrated circuits extremely cheap online. Everything became more expensive in 2023, so it was highly amazing to find integrated circuits for around 8 cents (Canadian) each (=6 cents USD/EURO = 1.14 ZAR).

One customer even said he received 105 pieces instead of 100. Actually, on second thought, those components are surface mounted devices, so it would be more difficult for me to make projects with them, totally independent of their price.

Looking further into ULN2003 I found it is a member of a wider family of integrated circuits, containing 7 Darlington pairs on each integrated circuit. I took the internal schematics from the manufacturer RCA.

My enthusiasm started to fade away. While those integrated circuits are cheap, there

is little I can do with them; at least for my amateur radio interest.

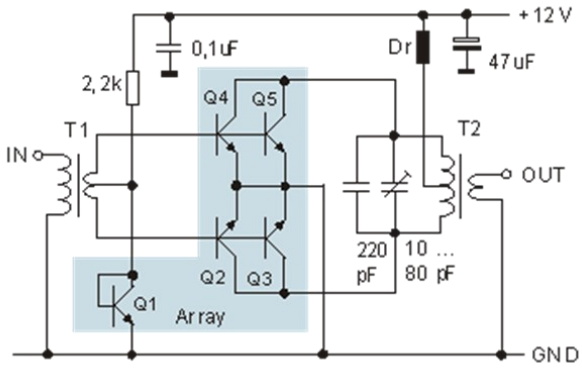


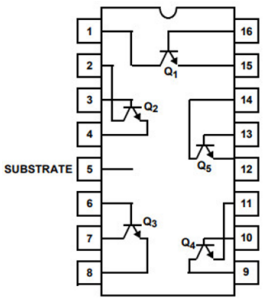
ULN2001 (each driver) ULN2002 (each driver)

ULN2003 (each driver) ULN2004 (each driver)

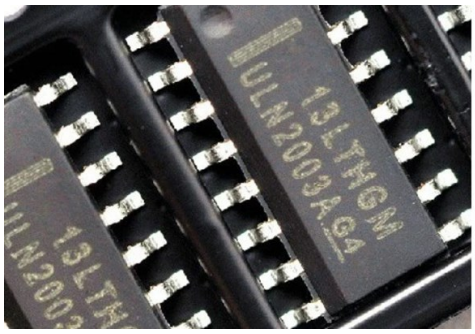
Digging deeper into transistor arrays I found something more useful, with a different type of integrated circuit, CA3083. It has 5 transistors in it, and there are amateur radio schematics available on the Internet for them.

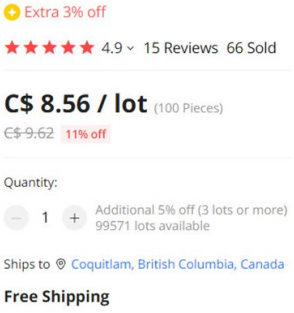
For example, SM0VPO has an article (https://www.qrp4u.de/docs/en/rf_ampl/index.htm) where he presents a "Push-pull Final with a Transistor Array".





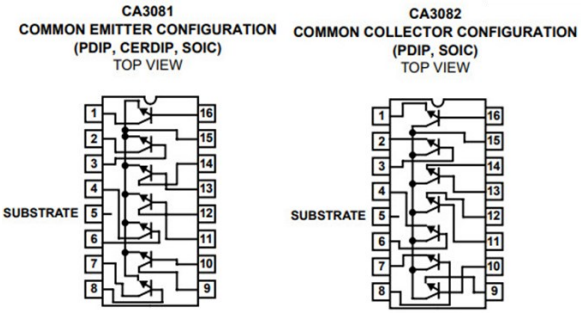
I took the internal schematic of CA3083 from the manufacturer's Intersil datasheet. Also, from the same source: *"The CA3083 is a versatile*





array of five high current (to 100mA) NPN transistors on a common monolithic substrate. In addition, two of these transistors (Q1 and Q2) are matched at low current (i.e., 1mA) for applications in which offset parameters are of special importance. Independent connections for each transistor plus a separate terminal for the substrate permit maximum flexibility in circuit design."

My interest came back. Unfortunately, CA3083 is found at a whopping price of C$2 for one piece (=1.5 USD=1.40 EURO= 29 ZAR), shipping and taxes included. CA3083 has two brothers, CA3082 and CA3081, which have a different internal configuration (from their Intersil datasheets):



CA3083 did not ring any bells with me, but CA3096 popped up into my mind. I was curious why CA3096 was so strong in my memory, and I found from its datasheet (Intersil).

CA3096 can be found for around C$1 each, shipping and taxes included, when bought 10 pieces in one order.

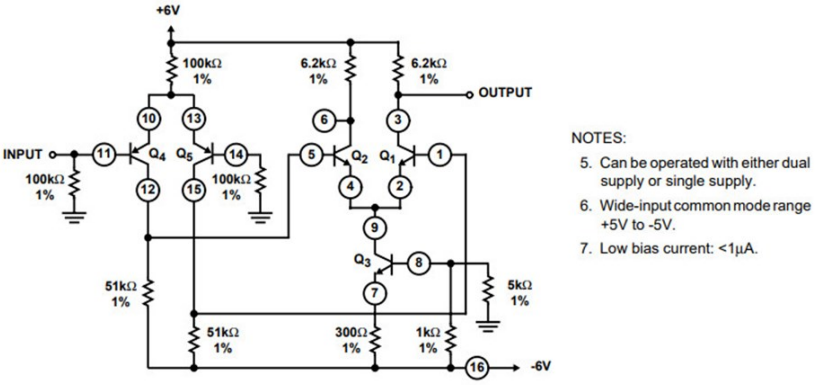
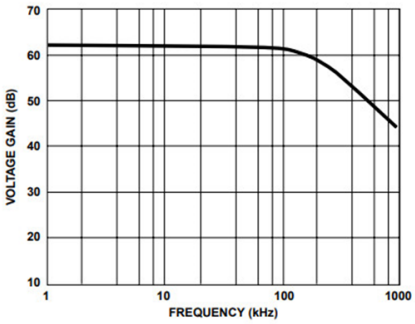
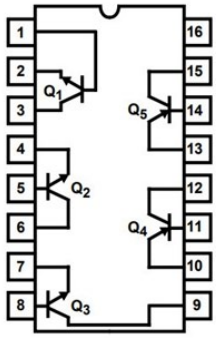


FIGURE 7. CASCADE OF DIFFERENTIAL AMPLIFIERS USING CA3096A



This integrated circuit CA3096 was worth staying in my memory since one can make an RF amplifier with it having a gain of 60 dB up to 100 MHz, and more than 40 dB up to 1 GHz. 60 dB means 1000 (one thousand) times amplification, and 40 dB still means 100 (one hundred) times amplification. I am writing about voltage gain, the ratio between the output voltage divided by input voltage; do not confuse this with ratios of powers, which would give totally different figures.



CA3096 is available from several manufacturers. I took the internal schematic from Farnell.

I hope that I have raised your interest for these almost perfectly matched transistor arrays now, since they are built all at once, in the same manufacturing process. Wikipedia has a short explanation of such integrated circuits:

"Transistor arrays consist of two or more transistors on a common substrate. Unlike more highly integrated circuits, the transistors can be used individually like discrete transistors. That is, the transistors in the array are not connected to each other to implement a specific function. Transistor arrays can consist of bipolar junction transistors or field-effect transistors. There are three main motivations for combining several transistors on one chip and in one package:

- *to save circuit board space and to reduce the board production cost (only one component needs to be populated instead of several)*
- *to ensure closely matching parameters between the transistors (which is almost guaranteed when the transistors on one chip are manufactured simultaneously and subject to identical manufacturing process variations)*
- *to ensure a closely matching thermal drift of parameters between the transistors (which is achieved by having the transistors in extremely close proximity)*

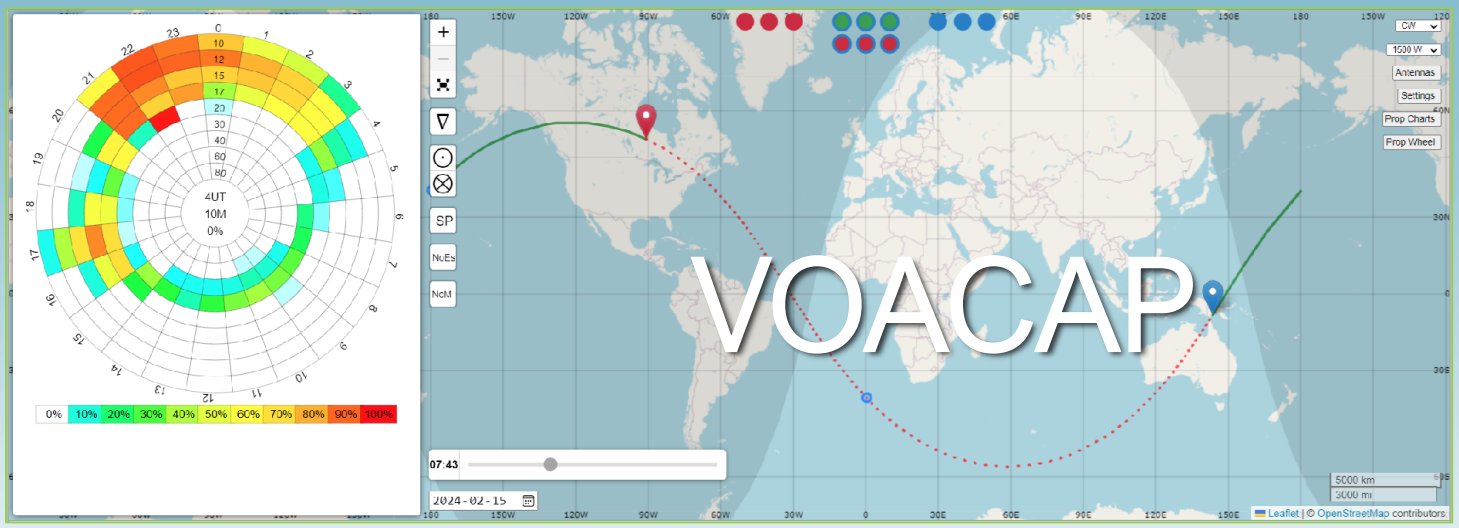
The matching parameters and thermal drift are crucial for various analogue circuits such as differential amplifiers, current mirrors, and log amplifiers."

Note: There are many integrated circuits starting with CA. Many of them are well known, like CA3028 and CA3053. They were (are) used in audio microphone amplifiers and balanced mixers for generating DSB (double side band) signals. From Harris Semiconductor:

Those integrated circuits are not considered transistor arrays, because the transistors are interconnected inside the IC and are not individually accessible at the pins of the integrated circuits.

This article started from finding something cheap online and trying to do something with it. This is how many of my projects start, and we can discuss whether the projects are useful to me or not. But for sure the projects were a lot of fun for me.

~ Daniel VE7LCG



Checking HF Propagation with VOACAP

50 years of research into propagation prediction

by DOUG ELLIOTT VA3DAE

Doug Elliott VA3DAE was first licensed in 2002. Doug is the Education and Public Service Coordinator at the London Amateur Radio Club in London, ON

The Voice of America Coverage Analysis Program (VOACAP) is the current state of 50 years of research into propagation prediction.

It was derived from IONCAP (The Ionospheric Communication Analysis and Prediction Program) which itself has a complicated history. The Voice Of America (VOA) American broadcast network took over its development in 1983 and funded the Naval Research Laboratory to make specific changes. This was completed in 1993 and the system was renamed to VOACAP. The base modeling software is freely available and is the basis of many software products used by ham radio operators.

If you'd like more information on VOACAP's history and capabilities, see this website: https://www.voacap.com/overview.html

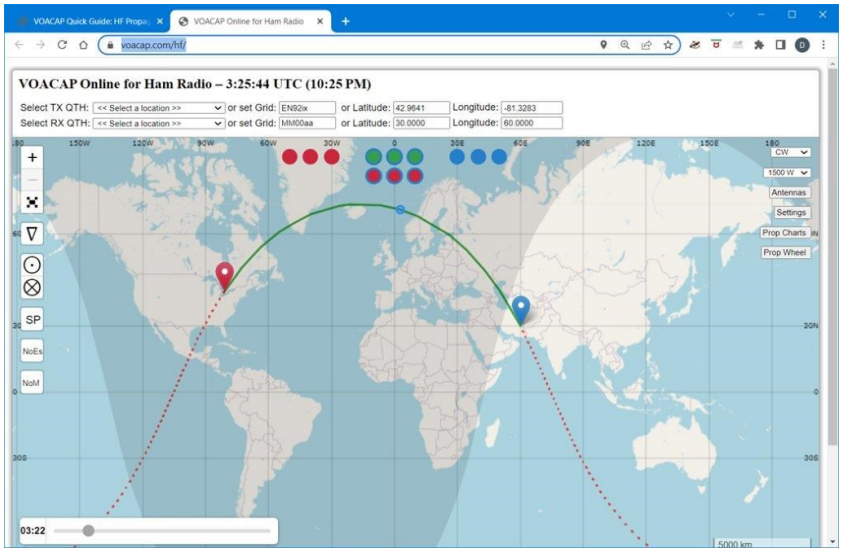
The good news is that the benefits of all this research and algorithm development is available to anyone who wants to connect to the VOACAP.COM website. This article will lead you through the process of setting up the website to generate a useful display for propagation prediction.

Bear in mind that the propagation predictions are not 100% accurate. They make use of the current solar weather parameters (SSN, SF, A, K), a large amount of historical data, and algorithms that have been improving for 50 years. However, they're not perfect, although in my experience they're quite good. Also note that the predictions are calculated once per hour, so the displays are so the displays are not quite real time. So let's see if we can generate a useful propagation display. The website can generate a lot of displays, and one of the challenges is to set it up to display what you're looking for. I'm going to describe the way to get a world map that shows the probability of establishing a good quality radio path for a given set of parameters, such as band, etc.

Step 1: Preparation

The easy way to specify your location is by using a 6 character grid reference. If you don't know yours, you can use mine, which will be close enough: EN92IX Southern Ontario, or you can look your Maidenhead Coordinate up on this website: https://dxcluster.ha8tks.hu/hamgeocoding/

Since VOACAP is a website, you'll need a working Internet connection.



Step 2: Connect to the website

Since the displays are generated on a website, you don't have to load any software, and the process will work on Windows, Macs, Linux, Raspberry Pi's, microwaves, and toasters. You might want to open a second copy of these instructions, so that one of them is still readable after you click on the website's link for map generation, which is: https://www.voacap.com/hf/

This should get you to a map of the world that looks like the image below left.

Step 3: Parameter Setup

This gets a little more complicated, but we'll work through it one parameter at a time.

Find the box at the top left labelled "Select TX QTH" and go to the next box to the right, labelled "or set Grid" Put your grid number here (or mine: EN92IX). Lower case is fine.

In the top right corner is a box for the planned mode, likely CW on your first time into the program. Click the down arrow, and select the mode you're going to use.

Below that is a box that indicates how much power you're going to use. Use the down arrow to show the available options, and select the closest one.

Move down to the next box, and click on "Antennas". A new panel shows up on the left *[see the image top right—next page]*.

Select an antenna for both the TX side (you) and the RX side (the rest of the world). Make sure you pick the entry that corresponds to the band you'd be using. I haven't found that this makes too much difference, and I always pick "1/4 wl GP Gd Gnd" for both sides. Wouldn't be a bad idea to do some experiments to see if different types make a difference for you.

When you've selected antenna types for the right band for both TX and RX, click on the "Antenna" box on the right side of the screen to get rid of the antenna list panel.

You know what's coming next... on the right side. click on the "Settings" box below the "Antennas" box which will bring up another new panel on the left side *[image centre right]*.

Under General Propagation Settings, set the Noise as appropriate. I recommend the "Residential (145)" setting. This can make quite a difference – if you have a lot of noise, select "Industrial (140)" instead, and if you're in a quiet environment, try "Rural (150)"

Don't specify a SSN explicitly, but enable Dyn SSN instead. Leave the Method as "Auto", and the Min. TOA as 3

In the next section, select the band you'll be working. I leave the UTC and range alone in the belief that they're not relevant for generating a map of the propagation right now.

I don't think TX Antenna Analysis applies to our map generation, but I leave it at Dipoles.

In Take-off Angle analysis settings I change from "Year" to "Month" based on something I read somewhere, but I've since forgotten where.

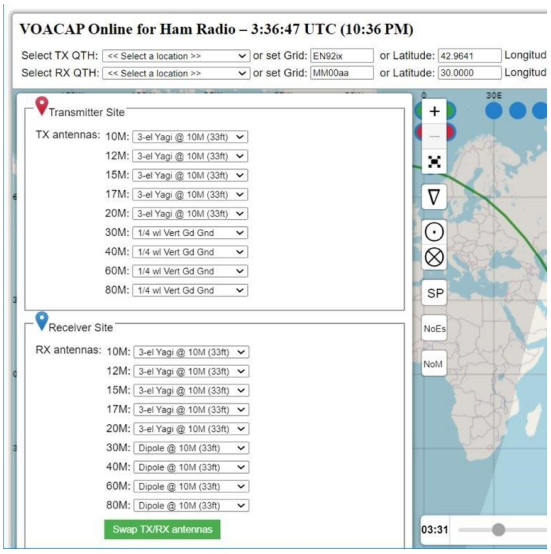
Click "settings" on the right to get rid of the Settings panel

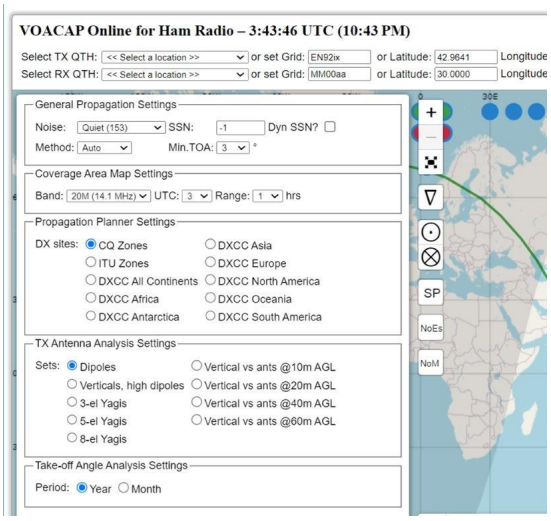
I ignore the "Prop Charts" box and the "Prop Wheel" box, and go right for the world map.

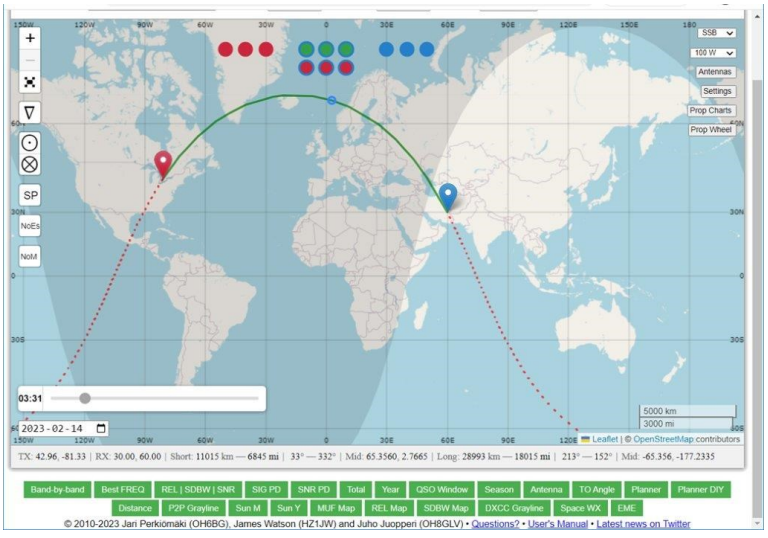
At the bottom of the window are 23 buttons with a green background. You may have to scroll down using the scroll bar at the far right of the window to make them visible *[image lower right]*.

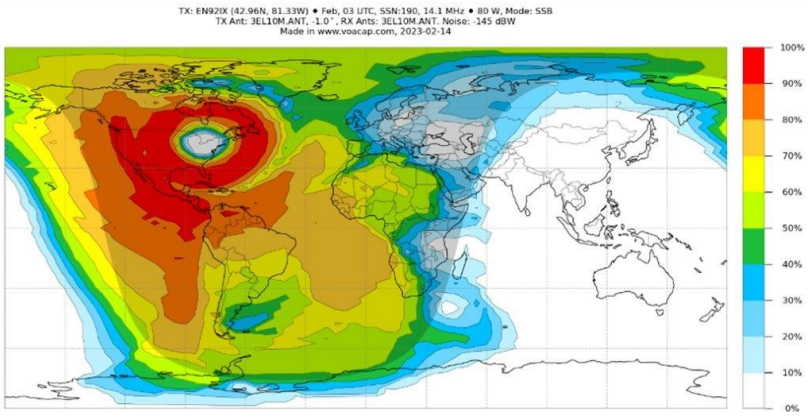
The fifth one from the end is labelled "REL Map" which stands for Reliability Map.

Click on this button, and try to be patient while you watch a blank white screen for up to 10 seconds.









Eventually a map like the one above appears in the top left corner. You can make the display bigger with (control – scrollwheel), or (control shift +)

The scale on the right indicates the probability that you can make a good contact with someone in the part of the map with that colour shading, with all the parameters you specified. Red areas have great propagation, blue not so much.

In case you can't remember what band you selected, the frequency is near the end of the top title line. In this example it says 14.1 Mhz, so it's 20M.

If you want to go back and look at your parameter settings, or change them, then kill the map display by hitting the X in the top right corner. (If you zoomed in, that will be maintained when you get back to the parameters, so you may want to zoom out again.) Click on the boxes at the top of the right side of the window to select what stuff you want to review or change.

To see how the map was affected when you changed a parameter, just click on the green "REL Map" button at the bottom of the main screen to generate a new map with the current parameters.

If you have questions about this article, or suggestions for improvement, please contact me.

~ Doug Elliott VA3DAE

instructor@LARC.ca

Thanks to Doug and LARC for permission to use this article. You will find this Ham Article: VOACAP (larc.ca), and other interesting articles on the LARC website

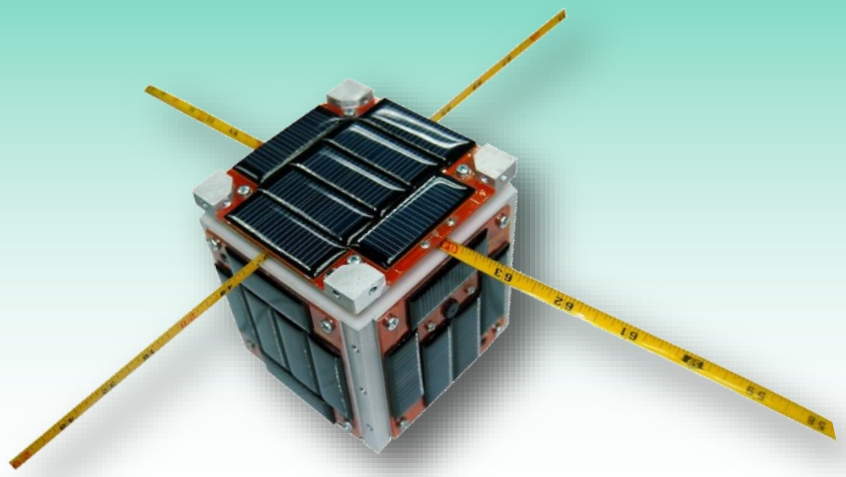
VOACAP stands for Voice of America Coverage Analysis Program, is a radio propagation model that uses empirical data to predict the point-to-point path loss and coverage of a given transceiver. It was originally designed for Voice of America.

The program was written in Fortran and takes into account several inputs such as the configuration and position of two antennas, solar weather, and time/date. It was based on the Ionospheric Communications Analysis and Prediction Program (IONCAP model), a scientific product released in the 1980s by the U.S. National Telecommunication and Information Administration.

VOACAP is an improved and corrected version of IONCAP, retaining all of the theory as put forth by John Lloyd, George Haydon, Donald Lucas, and Larry Teters in the 1975-1985 time-frame. Modifications were suggested and approved by George Lane, Donald Lucas, George Haydon, and A. D. Spaulding, a world authority on HF radio noise predictions.

Today, versions based on the original source tree exist for Windows, Linux, and OSX. The program core uses text files for I/O, and a bunch of wrappers now exist. For immediate results, VOACAP provides a web interface for both the coverage and the prediction

Satellites



The first Amateur Radio contacts from the moon

Using the Japanese SLIM lander

By JOHN SCHOUTEN VE7TI

Amateur radio is a hobby that involves using radio equipment to communicate with other enthusiasts around the world. Some of the most challenging and rewarding aspects of ham radio are making contacts with distant or rare stations, such as those in remote islands, polar regions, or orbiting satellites. But what about a station on the moon?

Is it possible to communicate directly with a station on the lunar surface? This is what the Japan Aerospace Exploration Agency (JAXA) and their Smart Lander for Investigating Moon (SLIM) achieved in 2024, creating the first amateur radio contacts from the moon using the Japanese SLIM lander.

The JAXA Ham Radio Club (JHRC), JQ1ZVI, secured amateur radio license JS1YMG for LEV-1, which has been transmitting Morse code on 437.41 MHz since January 19. The probe uses a 1 W UHF antenna with circular polarization and is transmitting "matters related to amateur business."

SLIM was the world's smallest moon lander, a 6U CubeSat that was launched by a NASA SLS rocket on September 6, 2023. Its mission was to analyze the composition of rocks to aid research about the origin of the moon. SLIM successfully landed on the moon on January 19, 2024, with exceptional precision, despite landing upside down, but within 180 feet of its targeted touchdown location. It was the fifth country to achieve a soft touchdown on the moon.

Just before landing, SLIM released two small lunar surface probes, LEV-1 and LEV-2. LEV-2 collected data while moving on the lunar surface, and LEV-1 received the data. The JAXA Ham Radio Club (JHRC), JQ1ZVI, secured an amateur radio license, JS1YMG, for LEV-1, which had a 1 W UHF antenna with circular polarization. LEV-1 started transmitting Morse code on 437.41 MHz, becoming the

A rendering of the Smart Lander for Investigating Moon (SLIM) on the lunar surface. [Japan Aerospace Exploration Agency, image]

first amateur radio station on the moon. The probe transmitted "matters related to amateur business", such as its battery voltage, temperature, and location.

LEV-1 transmits telemetry in the 435 MHz amateur satellite band (it has an IARU satellite coordination approval), and also in S-band. Shortly after the landing, CAMRAS received the 437.410 MHz signal from LEV-1 using the 25 m radiotelescope at Dwingeloo. They have published a couple of IQ recordings in their directory of miscellaneous recordings.

Radio amateurs around the world were excited to hear JS1YMG's signal, and some of them managed to establish two-way contacts with the lunar station. The first confirmed QSO (contact) with JS1YMG was made by JA0CAW on January 20, 2024, at 07:15 UTC. He used a 10-element Yagi antenna and a 50 W transceiver to exchange signal reports and grid locators with JS1YMG. He also recorded the audio of the contact and posted it on his blog.

The second confirmed QSO with JS1YMG was made by DK3WN on January 21, 2024, at 06:45 UTC. He used a 19-element Yagi antenna and a 100 W transceiver to communicate with JS1YMG. He also decoded the Morse code and extracted the data from the signal. He shared his results and screenshots on his website.

The third confirmed QSO with JS1YMG was made by EA4GPZ on January 22, 2024, at 08:30 UTC. He used a 23-element Yagi antenna and a 100 W transceiver to contact JS1YMG. He also wrote a blog post introducing the method and extraction results for demodulating Morse code from the signal, as well as extracting the code string.

JS1YMG's transmission lasted for about two weeks, until the lunar night set in and the probe ran out of power. JAXA said that SLIM was not designed to survive a lunar night, which lasts about 14 days. However, the probe's legacy will live on in the history of ham radio and lunar exploration, as it demonstrated the feasibility and potential of using small and low-cost lunar probes for amateur radio purposes. JS1YMG was not only the first amateur radio station on the moon, but also the first one to make direct contacts with Earth stations from the moon. This opens up new possibilities and challenges for ham radio operators who want to explore the moon and beyond.

~

QO-100 is Not a Ham Satellite—but what is it?

Mario, KD6ILO writes: " There was talk more among the private sector at their last east coast conference. Note: QO-100 is often referred to as a satellite. It's not. QO-100 is a hosted payload on commercial communications satellite. That's important to understand. Intelsat does host payloads as long as they can meet specific requirements, weight, space accommodations {room} and don't forget power source [it's own] etc. There is no way we can have an Amateur Radio TV standalone satellite in GEO; it's just valuable space real estate, a costly endeavor. Again it's finding that "maybe we can host your package" kind of answer. It has to be a very robust package.

Activity here in San Diego on QO-100 has been very active, thanks to Benno, PA3FBX, in the Netherlands for providing us with seven(7) channels of LIVE real time downlink feeds from [10Ghz] QO-100 and I appreciate the 24/7 feed to one of our channels for re-transmitting on our network as our STEM Students enjoy and the M0DTS WB Quick Tune v1_26b spectrum readout."

~ Mario Badua Jr. KD6ILO
San Diego DATV Soceity

Another successful launch

Post Launch Summary

By ADRIAN STIMPSON VE7NZ

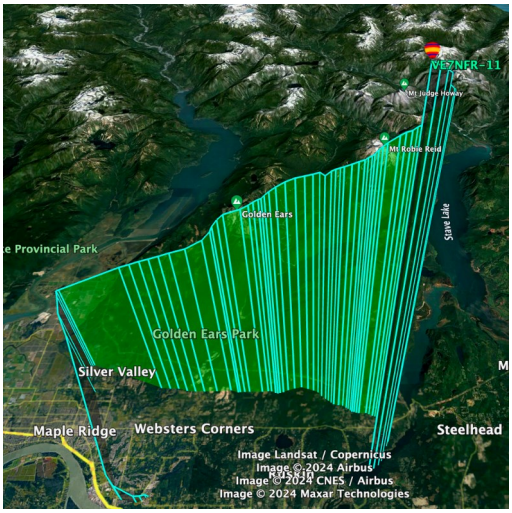
Adrian Stimpson VE7NZ Reports, "While not perfect we consider last night's mission a big success!"

What went right…

We launched on time at 6:02pm on February 16th, landed on time at 8:20 AND landed exactly where we expected!

The prediction model gave us a location in Surrey, BC and we landed within 300 metres of the prediction! This is amazing given the length of the flight, the numerous variables involved, and just marvelling that it went 31,000 metres above sea level (102,000 feet), before bursting and parachuting back to ground.

QSOs were had on the cross-band repeater from well south and west of Seattle to Vancouver Island to Eastern Washington and north through the Interior all the way up to Quesnel.



The nighttime launch with LEDs was the key to finding the balloon (see note about APRS failure below) and we could see the lights at launch even when the balloon was 2,000 metres above us.

What wasn't perfect…

Due to a problem with the APRS attachment to the payload line, it detached at 20,000 metres over Haywood Lake and is now intriguing the fish. This will make them believe in alien spaceships. We did get an APRS plot up until that point.

There was also some oscillation on the radio transmitter similar to what happened before. This is a known issue among balloon people, and no one is quite sure of the cause. We will work on this, possibly trying a different radio next time.

What's next?

We will upload the audio recording and log the call signs when we have time. Check www.ve7nfr.com/pico-balloons for that link. We plan to launch a couple of Pico balloons, probably in March. These will have WSPR trackers on them and our goal is to circumnavigate the Earth.

~ Adrian VE7NZ

Tech

Reviving Vintage Tube Equipment

A clever ’re-cap’ solution

by JENNY LIST—HACKADAY

If you’ve ever tinkered with older tube-based gear, you’re likely familiar with vintage electrolytic capacitors. These components often combined several capacitors into a single can. However, these once-common capacitors are now long obsolete, and finding replacements can be a wallet-draining experience.

Enter [D-Lab Electronics], who introduces us to an ingenious solution. In a recent video, they showcase a beautiful Heathkit oscillator—a classic piece of test equipment that generates a low-distortion sine wave. This particular oscillator follows the well-known phase shift model and features a light bulb in its feedback loop. Despite its age, it remains valuable for audio engineers.

Click for the YouTube video

The magic lies in the capacitor replacement. Instead of struggling with messy wiring, heatshrink sleeves, and hot glue, D-Lab Electronics opts for a modern approach. They replace the vintage capacitor with two contemporary ones mounted on a multi-cap board from [W8AOR]. These kits, available in various configurations, make the repair process much cleaner and more efficient.

So, if you’re restoring vintage audio equipment, keep an eye out for these handy capacitor kits. They’ll save you time, headaches, and—most importantly—your budget."

See the original HACKADAY article at: https://hackaday.com/2024/02/01/multi-way-capacitor-replacement-without-the-pain/

~ Jenny List
HACKADAY

HF In Small Spaces

A loop antenna may work for you

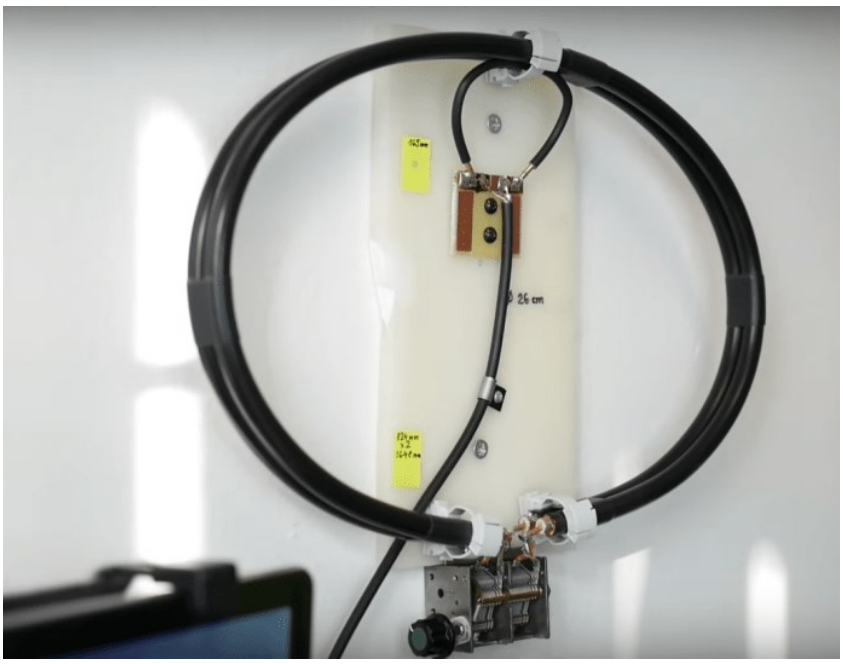
by BRYAN COCKFIELD—HACKADAY

New ham radio operators often face challenges in finding space for antennas on high-frequency (HF) bands. For instance, a 20-meter dipole antenna requires about 10 meters of wire, and lower frequencies like 80 meters need four times as much space. Alternatively, a magnetic loop antenna offers a solution, though it comes with the trade-off of a potential high voltage hazard.

These loop antennas, primarily used for receiving, can be adapted for transmission by soldering a capacitor to electrically lengthen the antenna. The described project utilizes two coaxial cable loops with a dual variable capacitor for tuning across bands. While these antennas lack omnidirectionality and are not optimal for transmitting, they can be effective for low-power applications like WSPR, especially in situations with limited space or for those seeking a simple setup. Despite their drawbacks, WSPR mode provides a cost-effective means for new operators to get on the airwaves.

Read the original article on Hackaday.

~ Bryan Cockfield
Hackaday



Click to watch on YouTube

RAC News

Canadian Amateur Radio Hall of Fame (CARHOF)

Radio Amateurs of Canada (RAC) is the national association for Amateur Radio in Canada. It is a not-for-profit membership association with its headquarters in Ottawa, Ontario, Canada, representing the interests of Amateur Radio across Canada.

Radio Amateurs of Canada represents all Canadian Amateurs at all levels of government. Speaking on behalf of Canadian Radio Amateurs, RAC provides liaison with government agencies and carries the Amateur voice about regulatory and spectrum issues to the discussion table with government and industry leaders, nationally and internationally. RAC is the Canadian voting member society of the International Amateur Radio Union (IARU).

The Board of Trustees of the Canadian Amateur Radio Hall of Fame is pleased to announce that Barrie Crampton, VE3BSB, has been named to the Hall of Fame. Radio Amateurs of Canada recognizes deserving Amateurs by appointments to the Canadian Amateur Radio Hall of Fame. The Constitution for the Hall specifies that the appointment as Member of the Hall is made for "outstanding achievement and excellence of the highest degree, for serious and sustained service to Amateur Radio in Canada, or to Amateur Radio at large". The Trustees of the Hall have interpreted the Constitution to mean that the person has performed significant service over many years to enhance the well-being of Amateur Radio.

Barrie Crampton, VE3BSB, was first licensed in 1954 and was issued the call sign VE2WQ. In 1955, he built his first radio transmitter and receiver and later one of his mentors helped him obtain a Royal Air Force R1155 aircraft receiver. Shortly thereafter, he began working with Spartan Air Services on the herculean task of photographing the Canadian Arctic for government mapping purposes.

In 1958, Barrie moved to Stittsville, Ontario and received the call sign VE3BSB. In the winter of 1968, he assembled several Amateurs at his cottage to test out the use of VHF radio units on snowmobiles and the results showed the feasibility of VHF network communications for community emergencies such as in search and rescue.

When Barrie retired in the 1980s, he moved to Perth, Ontario where he met Don MacKenzie, VE3ULM, who was the joint owner of various towers in Lanark County for his own communications company. In the early 1990s, Barrie and Wayne Henwood, VE3ICF, approached Don about using his towers for a VHF repeater network and one of CTV/CJOH's towers, with the help from Sandi Cameron, VE3AAC, a CTV engineer. It was this network that

Barrie as Emergency Coordinator for this area drove forward, which eventually led to a Memorandum of Understanding (MoU) between Lanark County and the Lanark North Leeds Amateur Radio Emergency Service (LNLARES) to provide radio services in times of an emergency.

The establishment of the LNLARES radio network proved extremely fortuitous as the 1998 Ice Storm was about to descend on Eastern Ontario. In Lanark County, many community hydro services from Southern Ontario arrived to help Ontario Hydro restore the electrical grid.

In the 2000s, Barrie worked with various schools in Lanark County through multiple initiatives to help them become more aware of Amateur Radio and its connection to space exploration. Responding to a request from a group of parents interested in establishing a school project as a team, he worked with the parents and members of the LNLARES group and assembled flight modules containing a camera and an APRS tracking transmitter to facilitate the launch and tracking of 15 helium weather balloons. They reached as far away as Maine and achieved an Amateur world record altitude of 130,000 feet.

In 2007, Barrie worked with Neil Carleton, VE3NCE and Al Niittymaa, VA3KAI, to arrange with Parks Ontario to have several archeologists communicate from their dig site at Murphy's Point Hoggs Bay to Neil's grade 5 classroom in R. Tait McKenzie School in Almonte. This was done through the LNLARES VHF Network to permit Neil's students to talk directly with the archeologists with various questions about their work at the dig site. The answers of the archaeologists were transmitted from temporary stations set up at the excavation and examination sites by LNLARES.

Barrie led a team of Canadian Amateurs in installing a WSPR (Weak Signal Propagation Reporting) beacon on the Polar Prince icebreaker during the Canada C3 Expedition – a 150-day expedition from Toronto, Ontario to Victoria, British Columbia via the Northwest Passage to celebrate Canada's 150th birthday.

The WSPR station aboard the ship garnered the attention of Amateurs around the world who, through their reception and reporting, provided over 600,000 reception contacts and precise locations of the Polar Prince during its C3 voyage. The propagation data that the voyage generated was eventually provided to the Canadian government for researchers needing to know about radio frequency propagation in the Arctic.

Barrie has continued with his commitment to Lanark County with a mapping project on the historical settlement of a large part of Lanark County. He also served as Deputy Reeve of Tay Valley Township during the pandemic and was very active in the LNLARES radio activities. Barrie continues to work on the updating/ modernization of the County's Amateur Radio network along with members of LNLARES, Almonte Amateur Radio Club and the Renfrew County Amateur Radio Club. In recognition of his outstanding community service work, Barrie was chosen as a recipient for the Queen Elizabeth II Diamond Jubilee Medal in 2012.

Radio Amateurs of Canada and the Board of Trustees of CARHOF sincerely congratulate Barrie Crampton, VE3BSB, on his appointment to the Hall of Fame. A detailed account of his achievements will be presented in an upcoming edition of The Canadian Amateur magazine.

For more information on the Canadian Amateur Radio Hall of Fame please visit: https://wp.rac.ca/carhof/

~ Prepared by Frank Davis, VO1HP

Chair, Board of Trustees

Canadian Amateur Radio Hall of Fame

World

Amateur Radio Day

April 18

Every April 18, radio amateurs worldwide gather to celebrate World Amateur Radio Day, marking the formation of the International Amateur Radio Union (IARU) in Paris in 1925. The pioneers of Amateur Radio were the first to recognize the potential of the shortwave spectrum for global propagation, challenging the perception of it being a wasteland. Fearing the sidelining of Amateur Radio in the rush to utilize shorter wavelengths, enthusiasts convened in Paris, establishing the IARU to safeguard and promote Amateur Radio on a global scale.

In a pivotal moment just two years later, at the International Radiotelegraph Conference, Amateur Radio secured allocations on the 160, 80, 40, 20, and 10-meter bands, still recognized today. Since its inception, the IARU has been unwavering in its commitment to defending and expanding frequency allocations for Amateur Radio. With support from administrations worldwide, radio amateurs now have strategic access to frequency bands across the spectrum.

The IARU, founded by 25 countries in 1925, has grown to encompass 160 member-societies spanning three regions. Region 1 includes Europe, Africa, the Middle East, and Northern Asia; Region 2 covers the Americas, and Region 3 comprises Australia, New Zealand, the Pacific island nations, and most of Asia. Recognized by the International Telecommunication Union (ITU), the IARU represents the interests of Amateur Radio globally.

Looking ahead to World Amateur Radio Day 2024, the IARU announces the theme: "A Century of Connections: Celebrating 100 years of Amateur Radio Innovation, Community, and Advocacy." With the IARU's centenary approaching in 2025, the organization reflects on a century of promoting innovation in amateur radio and fostering its growth worldwide.

The IARU, a sector member of the ITU since 1932, relies on volunteers from diverse countries and communities to represent Amateur Services at international and regional regulatory bodies. The achievements of these volunteers were highlighted at WRC-23, showcasing the ongoing success of their efforts.

As the centenary year approaches, the radio amateur community is urged to reflect on its remarkable achievements over the last 100 years. While the Amateur Services have been operational for over a century, 1924 marked the year when intercontinental amateur communication became more commonplace. Radio amateurs have since made unparalleled technological advancements, playing a critical role in sustaining global communications and responding to emergencies.

World Amateur Radio Day stands as an opportunity to reflect on the community's achievements since 1924, celebrating the diversity, advances, and innovations that have shaped the landscape. The occasion also sets the stage for the upcoming celebration of the IARU centenary, emphasizing the enduring impact of Amateur Radio on a global scale.

SARC will activate special event station VE7RCAF on Amateur Radio Day to celebrate both events.

~

Ham Radio

Outside the box

Building a Manpack – Part 3

The QRO Rig

by JOHN CORBY VA3KOT

John Corby VA3KOT resides in Owen Sound, Ontario but is more often found operating CW out in the "Big Blue Sky Shack". He especially enjoys activating parks for the POTA program and blogging about his experiences at HamRadioOutsidetheBox.wordpress.com

As in Parts 1 and 2, let me define what I mean by "manpack". My manpack is a manually transportable, rapidly deployable, field expedient complete radio station for operating while pedestrian mobile or pedestrian stationary.

Why QRO? I have to admit, I love QRP; I started my HF career as a QRP operator and I still enjoy it. I have yet another QRP radio on order – a QRP Labs QMX – but I won't belabor my frustration at how long I have to wait to take delivery. I started out with the original Yaesu FT-817 and I still own it (although I am considering selling it). But, unlike many others, I am not so committed to QRP that I wouldn't use a higher powered radio. I also own a couple of 100 watt transceivers, including a Yaesu FT-891 that I use exclusively for outdoor operations.

Back to the question – why QRO? There are several reasons. First, as I have written before, it is usually much faster to get delivery of a QRO radio than many QRP radios. Second, a fully-featured QRO radio often costs less than a QRP radio with similar features – compare the price of, say, an Elecraft KX2 (QRP) with that of a Yaesu FT-891 (QRO) as a case in point.

But are there operational reasons why one might choose QRO over QRP? Certainly there are. A 5 watt CW signal will be received only 2 S-units lower than a 100 watt signal. But what if the conditions are such that the QRP signal is below the noise? And, what if practical considerations dictate that a highly comprised antenna is the only option?

True, a QRP radio with an efficient antenna will get the signal out in almost all conditions. But consider this; sometimes a very compromised antenna is all that is possible. I recall visiting a POTA entity in the middle of a town last summer. It is a historic public building and the only available space to operate was in the very compact grounds outside the building. A short whip and a manpack radio would be the only practical way of activating the site. I moved on to a different park where I could erect a better antenna, but I plan to return.

Another consideration is that the RF power of a QRO radio can be wound down to QRP level when low power is an option. That is not an efficient way to operate for sure. My QRO rig uses almost as much battery current on receive as my QRP rig uses on transmit. I do have the option of operating at 5 watts, but with more power available if necessary. My mantra is: QRP when possible; QRO when necessary.

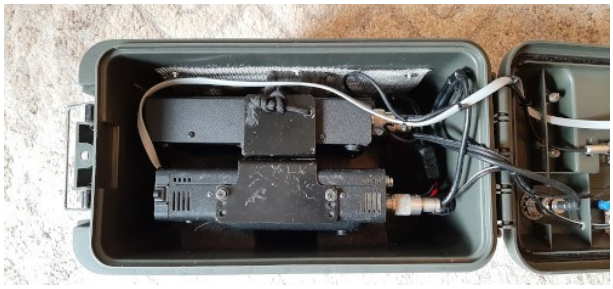
My QRO rig uses almost as much battery current on receive as my QRP rig uses on transmit.

How often do I operate QRO? Well, if QRO means 100 watts, then almost never. I prefer a mode I like to refer to as QROp. If QRPp means 1 watt or less, I define QROp to mean maybe 20 watts. The battery drain with the FT-891 at 5 watts is already high; increasing power to 20 watts doesn't increase the battery drain to any significant extent but it might help to overcome any inefficiencies in a field expedient antenna system.

To build the QRO rig, a plastic "50-caliber ammo case" was used, just like the QRP rig. While the QRP rig is entirely self-contained, the QRO rig used to require an external battery. I use a Bioenno 12Ah LFP (Lithium Iron Phosphate) battery that lasts for at least 3 POTA activations at QROp power. I highly recommend Bioenno; their batteries are expensive but very reliable. The battery was too large to fit inside the case, mainly because the body of the FT-891 and an LDG Z11 Pro used up all the space inside.

Note the external battery on the left. Also shown are the CWMorse paddles which have a protective cover (but don't prevent ingress of bug repellent aerosol spray as I discovered one day last summer!

To fix this problem I decided to eliminate the LDG tuner. It's a great product that has performed admirably well for a long time,



Inside the case showing the FT-891 body and LDG Z11 Pro autotuner

QRO rig during a POTA activation on the beach at Black Creek Provincial Park, Ontario.

Note the external battery on the left. Also shown are the CW/Morse paddles which have a protective cover (but don't prevent ingress of bug repellent aerosol spray as I discovered one day last summer!

Case lid. NB: the DC power connection has now been rerouted to allow a microphone jack to be fitted (just in case I feel inspired to do a phone activation one day hi hi).

but the physical format doesn't suit the style of enclosure I have chosen. The tuner is designed to be free standing and has no means to attach a mounting bracket. It had to lay on its side to fit into the ammo case which meant the buttons were inaccessible.

So I decided to replace it with a more compact manual tuner. I have had a lot of success with a home made manual L-match. The LDG autotuner also uses "L" topology and frankly is no faster at finding a match than the new manual L-match. Now the manual tuner AND the battery can be accommodated inside the case and there is also room to store a set of paddles and over-the-ear headphones.

The headphone and key jacks were relocated to allow space for the L-match controls (hidden under the case handle – blame Sir Isaac Newton hi hi)

Another difference between the QRP and QRO packaging is that the QRP rig case must be opened when operating. The lid was made to be removable, but when closed, provides a weatherproof seal for protection. The QRO rig does not need to be opened during operation. The FT-891 head is mounted on the case lid, as are the jacks for the CW paddles and headphones, the memory buttons, and now the L-match controls. This arrangement requires additional protection while transporting the rig. The 3.5mm jacks were recently replaced with 1/4-inch jacks for ease of maintenance, but I am considering replacing the 1/4-inch jacks with screw-on aviation style connectors for added reliability during field operations. It is difficult to keep connections clear of sand, soil, bugs and moisture when operating in the field.

L-match controls detail. The variable inductor on the left and the variable capacitor on the right. In the center is a switch for selecting high impedance (HZ) or low impedance (LZ) antennas.

Inside the rebuilt case lid showing the L-match components (center bottom)

Is weight an issue? Yes, the QRO rig weighs more than the QRP rig. I am not a mountain goat; actually the "mountains" in Southern Ontario reach a towering height of no more than about 500 meters (1600 feet) above sea level. The only SOTA summit in my area can be activated from the roadside; you

The "mule"

wouldn't even know you were on a "summit". So I don't worry about weight too much. I have a one-wheeled assistant I call my "mule" that can negotiate almost any terrain I am willing to operate in. I am sure a fit young member of the armed forces would laugh at the challenge of carrying my POTA backpack. Although I am reasonably fit "young" is something I remember from a long, long time ago.

~ John VA3KOT

I acknowledge that we have this in reverse. If you would like to read Part One of this series go to: Building a Manpack – Part 1, the Antenna – Ham Radio Outside the Box .

Part Two is at: Building a Manpack – Part 2, the QRP Rig – Ham Radio Outside the Box

I have a One to One Bal-Un which goes from a balanced Coax to an unbalanced Center fed dipole. It is contained in a sealed box with, at the bottom end, a PL-259 connector and at the other end two sockets for bullet connectors for the antenna wire. The Bal-Un is inside the box.

The input impedance of a resonant dipole configured as an inverted V is typically close to 50 Ohms. This is because lowering the ends of the dipole towards the ground in a V configuration reduces the feed impedance from the typical 70 Ohms of a standard dipole to near 50 Ohms. This makes the inverted V configuration popular among amateurs as it naturally matches the impedance of commonly used 50 Ohm coaxial cables. However, the exact impedance can vary depending on specific installation factors such as the height above ground and the angle of the 'V'. For best results, the apex angle should be kept between 70 and 110 degrees.

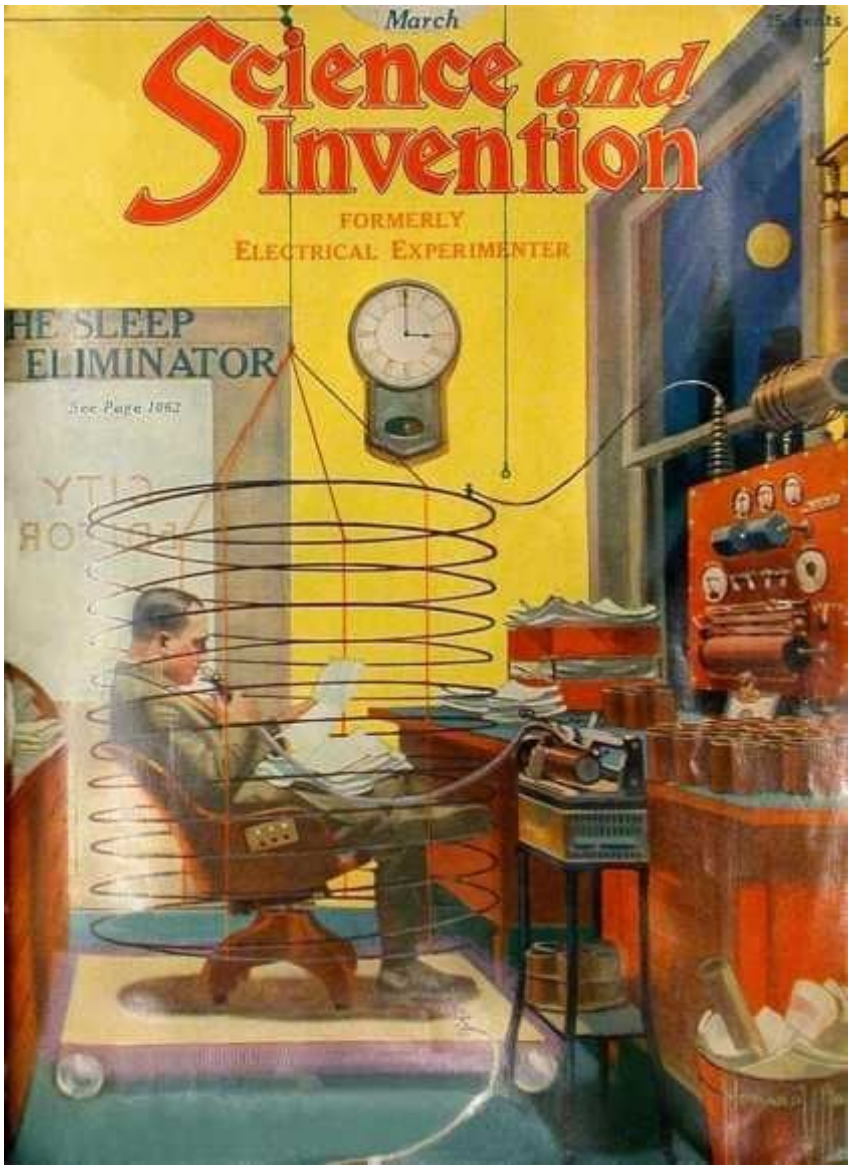
And yes, using a balun when connecting a 50 ohm coax to a resonant wire dipole can be beneficial. A balun, which stands for BALanced to UNbalanced, is used to connect balanced lines (like a dipole antenna) to unbalanced lines (like a coaxial cable) while preventing unwanted transmission line radiation – not so much to match impedance.

The primary purpose of a balun in this context is to ensure that the transmission line does not radiate like an antenna. This is achieved by ensuring that each conductor carries equal and opposite currents. If the currents are not equal and opposite, they don't cancel, and the difference results in an external electromagnetic field, causing your transmission line to radiate like an antenna1. This can cause high RF in the shack, messing with speakers, digital electronics, etc.

A 1:1 balun is commonly used in this scenario, offering a one-to-one transformation ratio. This means that the 50-ohm unbalanced impedance of the coax on the primary side of the balun will match the 50 ohm balanced impedance of the dipole on the secondary side, while preserving the balance of the dipole.

So yes, you can use that 1:1 balun, but perhaps not as you intended to match impedances.

~



The sleep eliminator… perhaps a new SARC project?

FEEDBACK

I read all of the article regarding "Digital" as well as many other offerings. Don't know anything about digital but came away with a greater basic understanding. What a fantastic overall newsletter. Makes me want to go back to those electronic classes I skipped a long time ago.

Bernie, VE3HUU

Some Positive feedback !! Keep up the great work!!

Mike VE3MKX

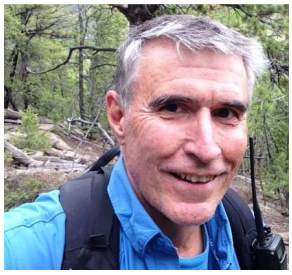
I'm blown away by some of these professional quality newsletters. They not only look great but they have awesome content as well. Thanks for sharing.

~Pat VE3EUR

An Easy HF Antenna

I was happy to contribute an article

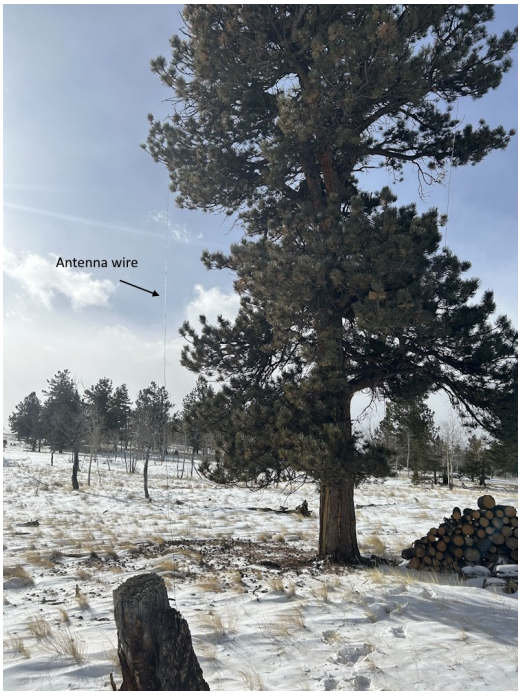
by BOB WITTE K0NR



Bob Witte K0NR maintains a great blog site at https://www.k0nr.com/wordpress/

When radio amateurs get ready to put an HF station on the air, they often have questions about what antenna to use. The good news is that there are many options to choose from. The bad news is that there are too many options to choose from. It can be overwhelming. This post describes an antenna I just installed that is easy to put up and works well.

Having 30-foot tall pine trees on our property, my usual approach for HF antennas is "wires in the trees." I have several ropes strung up over these tall trees so that I can raise and lower wire antennas as needed. These ropes were installed using a slingshot to launch a fishing line over the top of the tree, then I pulled up a lightweight rope.



The ponderosa pine tree supports the endfed wire antenna.

The 9:1 UNUN provides the matching at the end of the wire antenna.

End Fed Long Wire

The antenna is the EFLW-1K from MyAntennas.com, which is an End Fed Long Wire Antenna. (This should not be confused with an End Fed Half Wave antenna.) This antenna is intentionally cut to not be a resonant length on any of the bands. The 9:1 UNUN transforms the high impedance at the end of the wire down to something closer to 50 ohms. The match is not perfect so an antenna tuner is required to cover all of the bands. MyAntennas offers this antenna with different lengths of wire, with longer wires required to support the lower HF bands. I purchased the 53-foot version but decided to shorten the wire. My interest is working 20 meters and higher and I wanted the antenna to be mostly vertical, so I shortened the wire to 36 feet. The MyAntennas products are good but other similar 9:1 UNUN products on the end of a wire will work.

An endfed antenna like this needs some kind of counterpoise to balance out the antenna operation. Many people have written about this and there are many different approaches. The MyAntenna UNUN has a connector intended to support adding a short length of counterpoise wire. I could have gone that route but a decent length of coaxial cable lying on the ground can function as this counterpoise. So that's what I decided to use.

The B11ISO isolation transformer is inserted in line with the coaxial cable.

I also added an inline isolation transformer to minimize the common mode currents getting back to the transceiver. I don't know that this is required but I had one available so I used it. The antenna has 50 feet of LMR 400 coax laying on the ground which connects to the inline transformer. Then, another 25 feet of RG-8X coax connects the transformer to my transceiver. The internal antenna tuner in my Icom IC-7610 handles this antenna quite well, tuning up on 20m, 17m, 15m, 12m and 10m. This means I can instantly switch between the bands and be ready to go.

I've been running SSB, FT8 and FT4 on this antenna, working many stations in all regions: Europe, Asia, Oceania, Africa, North and South America. Conditions are great and I keep telling newer folks: now is the time to be on HF! This basic antenna is a great way to get on the air and work some DX.

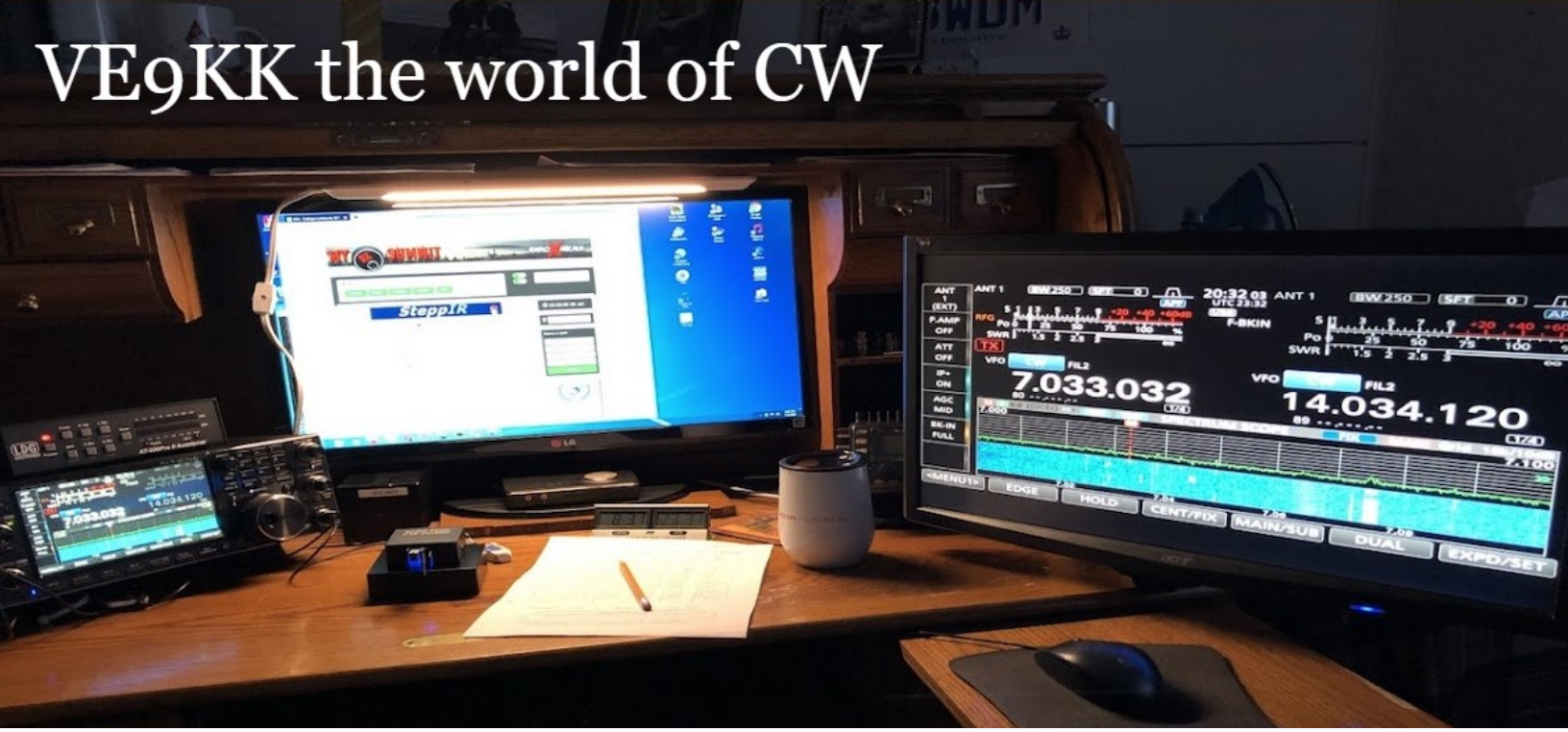
73,

~ Bob KØNR

Check out Rob's book
VHF, Summits and More: Having Fun With Ham Radio.

This book is an easy-to-understand introduction to VHF/UHF ham radio, including practical tips for getting on the air and having fun messing around with radios. Learn about FM, SSB, repeaters, equipment, band plans, phonetics, portable operating, Summits On The Air (SOTA) activations and more.

VE9KK the world of CW



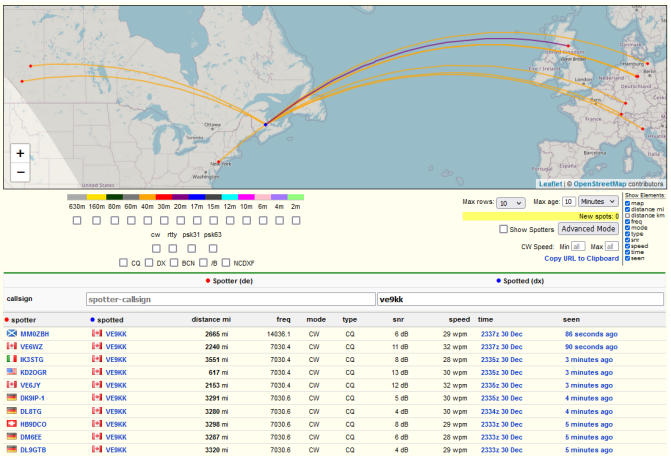
Reverse Beacon Network

An odd thing happened

by MIKE WEIR VE9KK

Mike Weir VE9KK was first licensed in 1989 and upgraded to advanced in 2000. He primarily operates contests both CW and RTTY.
His blog is at: [VE9KK the world of CW]

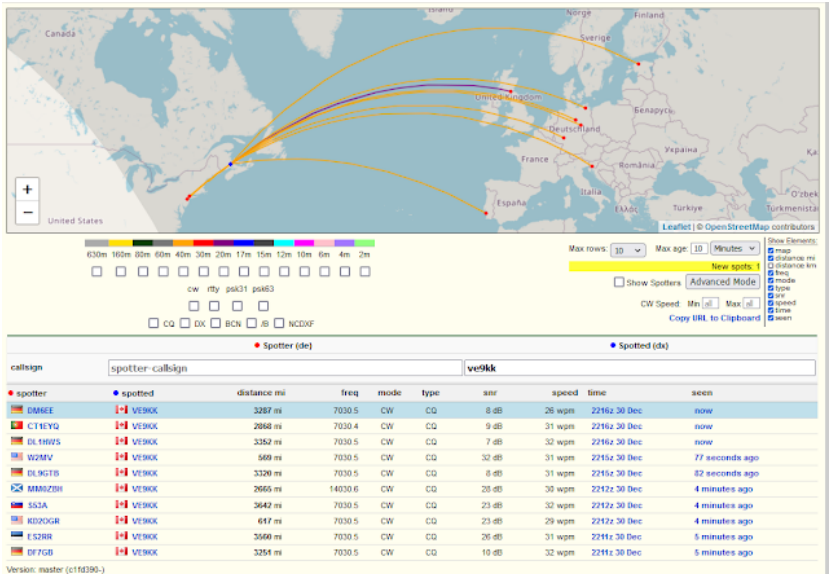
During the 2023 Canada Winter contest I had an odd thing happen twice with the Reverse Beacon Network website. But before I go into that let's talk about what I use the Reverse Beacon Network for in contests. This site has a huge amount of stations that just listen for stations calling CQ. If you are heard then you are shown on a world map along with your signal strength to that location. This is a great tool during a contest for me as it shows where and how strong my signal is. I have used this site for years but in the last contest, something happened that never has and it happened twice.

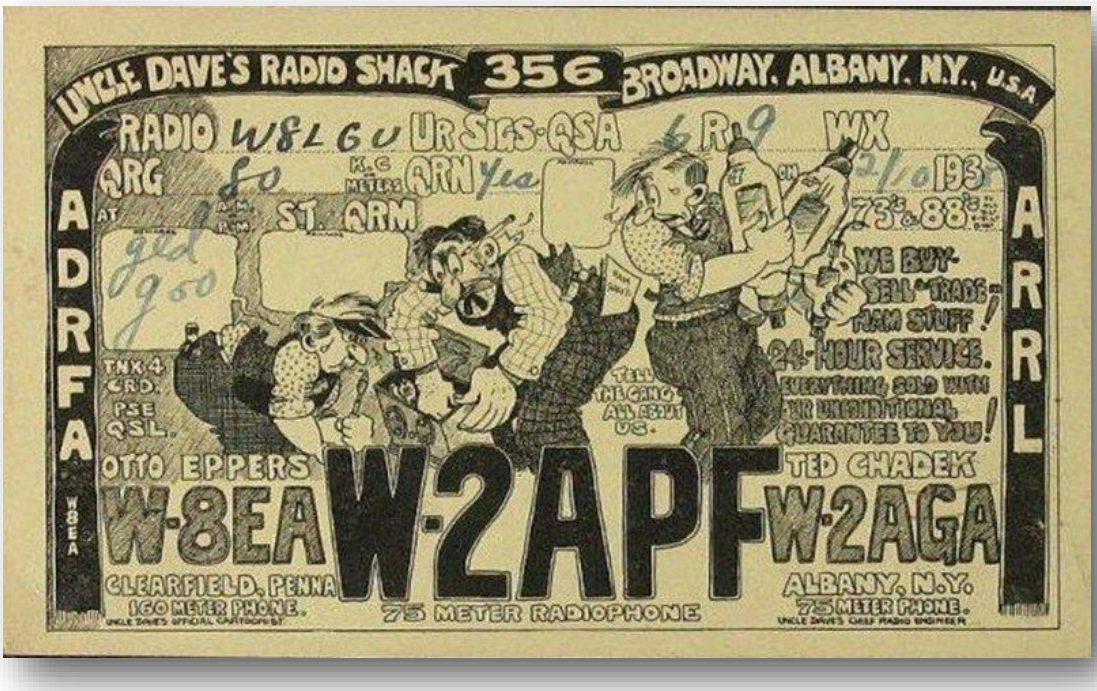


I was calling for some time on 40m CQ contest and I was getting Reverse Beacon Network feedback from my signal. The reporting station MM0ZBH reported me but on 20m? Informing me my signal was 6dB and on 14036 and not 7.030 where I was calling CQ contest this was at 2337UTC.

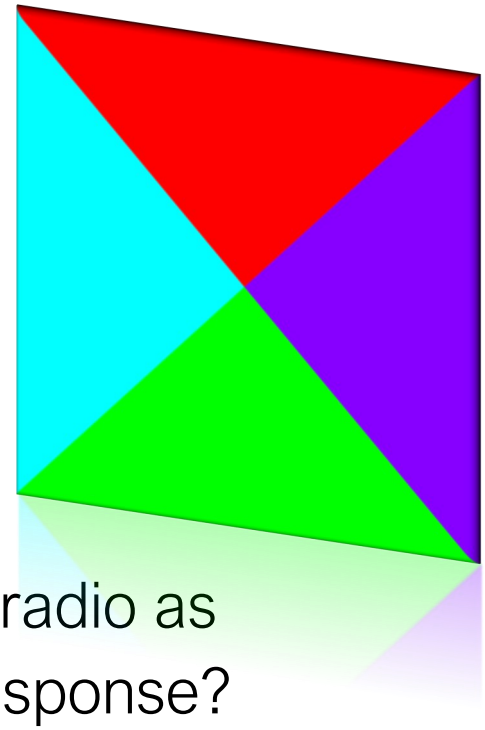
Earlier at 2212UTC the same station had reported me again on 20m this time at 14030 when I was calling CQ on 7030 and my signal strength this time was 28dB. This was odd and even more so when it happened twice in the contest. Any ideas out there and has anyone had the same issue happen to them?

~ Mike VE9KK





Foundations of Amateur Radio



What is amateur radio as an emergency response?

by ONNO BENSCHOP VK6FLAB

Onno Benschop
VK6FLAB
To listen to the podcast, visit the website: http://podcasts.vk6flab.com/. You can also use your podcast tool of choice and search for my callsign, VK6FLAB.

Full instructions on how to listen are here: https://podcasts.vk6flab.com/about/help

I recently discussed some of the notions of amateur radio as emergency response. The idea that you might jump into the breach and be a hero is appealing and often celebrated.

The American Radio Relay League, or ARRL, proudly tells the story of two amateur radio emergency communication events. One, of a person who fell in their bathroom and happened to have a handheld radio that they used to contact another amateur who contacted emergency services. The story goes on to say that being part of the Amateur Radio Emergency Services or ARES had taught the amateurs the ITU phonetic alphabet, as-if that's not a requirement for getting your amateur license. Then there's the story of two teenagers who were critically injured in a remote area and amateur radio rescued them due to a contact with a random local amateur. Never mind that there was a local off-duty EMT who actually stabilised the patients.

While you might point at this as "amateur radio to the rescue", to me this is a case of people attempting to make the story about amateur radio. If the person in the bathroom happened to have a mobile phone nearby, the story would not have even made the nightly news and if the people in the remote area had actually prepared properly, they'd have had an emergency position-indicating radio beacon or EPIRB and a satellite phone, rather than accidentally bumping into a random radio amateur.

Moving on. Have you ever noticed that your mobile phone stops working after a couple of hours during a power outage? It's because mobile phone towers run on batteries that depending on load might last up to 12 hours, often much less than that, anywhere from down when the power goes out to 3 hours until the batteries fail. Note that I'm not talking about the battery in your phone, I'm talking about the ones in the tower serving your phone.

I mentioned previously that there was a network outage affecting 40% of the Australian population. The get-out-of jail card was that the rest of the population still had mobile, landline and internet connectivity. What would happen if the other network operator also went down?

Is there a place for amateur radio in those scenarios?

Let's explore. If all mobile, telephone and internet networks were down, what would that look like? Could you call an ambulance or the fire department using amateur radio? Who would you talk to, on what frequency and on which radio would they be listening? Would you set up your portable shack in the local hospital or fire station? Would ambulances and fire services be able to coordinate during such an outage, or would you have your local amateur club ride-along on every ambulance and fire truck?

What does such a system look like in actuality? Has there been any planning or training for this? Are there refresher courses and special certifications? Does your local community have anything like this in place, or are you starting from scratch?

During widespread and long lasting fire emergencies in Australia, radio amateurs have acted as emergency services radio operators. There is at least one amateur club where, years ago, the members underwent special training with the local State Emergency Services to learn their language and procedures, just in case it becomes short staffed when an actual emergency occurs.

I've often said that doing contests is a good way to learn how best to operate your station and how to work in adverse environments with lots of interference, man-made or otherwise. The reality is that it's more likely than not that you'll be using a line-of-sight FM radio in the emergency services communications bunker than sitting in the rubble of your shack using HF with a wire antenna running off battery trying to get someone, anyone, to help you and your community.

There are official amateur radio emergency organisations, WICEN in Australia, ARES and RACES in the United States. Much is made by these organisations about joining and training, but very little in the way of actual emergency response. Is that a marketing issue, or are these types of organisations obsolete and waiting to be disbanded?

All podcast transcripts are collated and edited in an annual volume which you can find by searching for my callsign on your local Amazon store, or visit my author page: http://amazon.com/author/owh. Volume 7 is out now.

Feel free to get in touch directly via email: cq@vk6flab.com, follow on twitter: @vk6flab or check the website for more: http://vk6flab.com/

If you'd like to join a weekly net for new and returning amateurs, check out the details at http://ftroop.vk6flab.com/, the net runs every week on Saturday, from 00:00 to 01:00 UTC on Echolink, IRLP, AllStar Link, IRN and 2m/70cm FM via various repeaters.

If you'd like to participate in discussion about the podcast or about amateur radio, you can visit the Facebook group: https://www.facebook.com/groups/foundations.itmaze

This podcast episode was produced by Onno (VK6FLAB). You can find more

My point is this.

If amateur radio is really a service as the WIA states, "A Trusted Partner in Emergency Response", or as the ARRL puts it, "When All Else Fails", even making that a registered trademark, where is the evidence of their activity, where are the annual reports, the after action lessons learnt, the inter-team competitions, the talks at local clubs, the league tables of emergencies handled, lives saved and babies born?

To give you insight into just how broken this is, any licensed amateur can become a member of ARES, but you can only read their newsletter if you're a member of the ARRL. In Australia, for a while, the WIA offered a course for Public Safety Training for Radio Amateurs, but only to amateurs with an Advanced license, which I discovered after spending $633.92 to print out, collate and bind the 973 pages of course material, as-if those of a lesser amateur radio qualification somehow were less able to read a map, operate communications equipment, follow defined occupational health and safety policies and procedures, work effectively in a public safety organisation, as part of a team, or in an emergency operations centre.

So, what's your plan for providing amateur radio as a service?

~ I'm Onno VK6FLAB

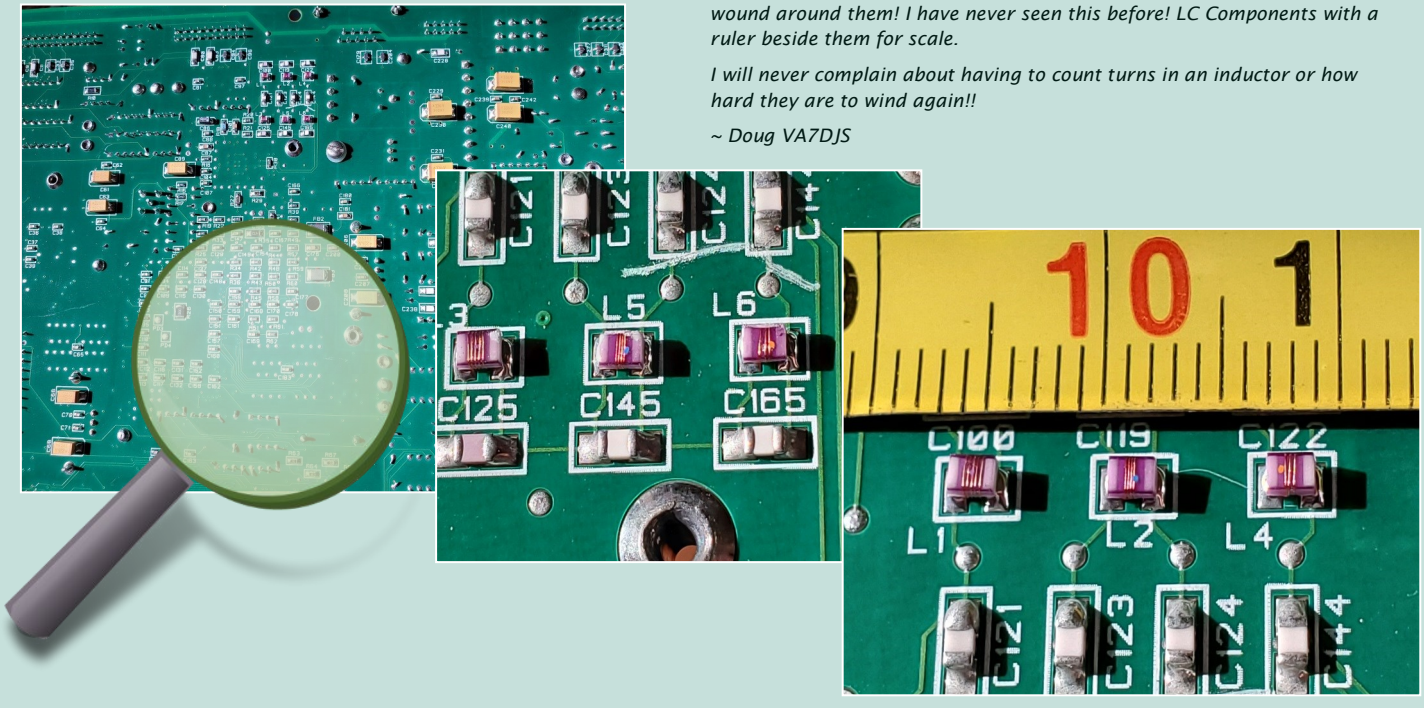
Amazing coils!

I was working on this board today when I noticed something amazing in the surface mounted parts. See the attached 3 pictures. Overview of board:

Close up of LC components. These surface mounted capacitors have coils wound around them! I have never seen this before! LC Components with a ruler beside them for scale.

I will never complain about having to count turns in an inductor or how hard they are to wind again!!

~ Doug VA7DJS



KB6NU'S HAM RADIO

U.S. Senate Bill S.3690 Introduced

to eliminate private land use restrictions on amateur radio

by DAN ROMANCHIK KB6NU

Dan Romanchik KB6NU blogs about amateur radio at KB6NU.com when he's not trying to figure out which way current flows. Dan teaches ham radio classes, and operates CW on the HF bands. Look for him on 30m, 40m, and 80m. You can email him at cwgeek@kb6nu.com

This bulletin was sent out by the ARRL last week. Getting legislation like this passed takes a long time, so let's not just dismiss this out of hand. One positive thing about this bill is that it had bipartisan support. Wicker is a Republican, while Blumenthal is a Democrat. Contact your senators and tell them that you'd like them to support this bill, too… Dan

On January 30, 2024, US Senators Roger Wicker (MS) and Richard Blumenthal (CT) introduced S.3690, the Senate companion bill to H.R.4006, introduced last June. Both bills reflect the Congressional campaign efforts by the ARRL to eliminate homeowner association land use restrictions that prohibit, restrict, or impair the ability of an Amateur Radio Operator to install and operate amateur station antennas on residential properties they own.

The text of bill S.3690 can be found at https://www.congress.gov/bill/118th-congress/senate-bill/3690/text.

Amateur radio operators repeatedly are relied upon to provide essential communications when disaster strikes, but their ability to do so is being impaired by the exponential growth of residential private land use restrictions that hinder their

ability to establish stations in their homes with which to train and provide emergency communications when called upon.

In announcing the introduction of S.3690, Senator Wicker said, "Because communication during natural disasters is often hindered, we should be making every attempt to give folks more options. Reliable access can make the difference between life and death in an emergency. Our legislation removes roadblocks for amateur radio operators looking to help their friends, families, and neighbors."

In a similar announcement, Senator Blumenthal stated: "Our measure will help clarify the rules so ham radio enthusiasts can successfully continue their communications. In the face of emergency or crisis, they help provide vital, life-saving information that allow listeners to properly and safely respond, but prohibitive home association rules and confusing approval processes for installing antennas have been an unnecessary impediment. The Amateur Radio Emergency Preparedness Act resolves these bottlenecks and ensures that radio operators can function successfully."

ARRL President Rick Roderick, K5UR, and Director John Robert Stratton, N5AUS, Chair of the ARRL's Government Affairs Committee, both extended on behalf of ARRL, its Members, and the Amateur Radio community their thanks and appreciation for the leadership of Senator Wicker and Senator Blumenthal in their continuing efforts to support and protect the rights of all Amateur Radio Operators.

Amateur radio videos: One CW question, ham radio is for hackers, antenna masts

Vince, VE6LK, has been on a quest to learn CW. Being a YouTuber, he's asked a bunch of current CWops for tips on how to learn CW and improve one's skills. He has a whole series of them on his YouTube channel. Here's my contribution.

Ham Radio is for Hackers

It's often said that hams were the first electronic hackers, so it's really a shame that ham radio has a reputation for being a stodgy hobby. Here, Ward de Ritter, ON8WR, gives a talk on ham radio to the Hacker Hotel 2024 Conference.

Masts for your "Garden"

The tree supporting the far end of my Cobra antenna is not long for this world. That means I'm going to have to find a way to support it back there. In this video, Peter Waters, G3OJV, the founder of the English ham radio retailer Waters & Stanton, discusses three mast options that I might consider. Coincidentally, I worked G3OJV on 30m CW a couple weeks ago.

No-Ham Recipes

Hot cross buns

by VIVIAN TAYLOR VE7VLT

Hot cross buns! Hot cross buns!

One a penny two a penny - Hot cross buns

If you have no daughters, give them to your sons

One a penny two a penny - Hot cross buns

Hot cross buns are believed to date back to pre-Christianity, but the use of the term "hot cross bun" was not recorded until 1733. The buns were sold in English streets to the cry of, "Hot cross buns!" They are generally sold at Easter to commemorate the resurrection of Jesus Christ, following his crucifixion.

Food historian Elizabeth David says the buns were seen by Protestant English monarchs as a dangerous holdover of Catholic belief, since they were baked from the consecrated dough used to make communion wafers. The government attempted to ban the sale of the buns, but they were unsuccessful - the buns were too popular. Ultimately, Elizabeth I passed a law allowing bakeries to sell the buns, but only at Easter and Christmas.

- 3 tablespoons (45 ml) shortening
- 1/3 cup (90 ml) sugar
- 1 teaspoon (5 ml) salt
- 1 cup (250 ml) milk, scalded
- ¼ cup (65 ml) lukewarm water
- ¾ teaspoon (3.75 ml) cinnamon
- ½ yeast cake
- 1 teaspoon (5 ml) ginger
- 1 egg
- All-purpose flour
- ½ cup (125 ml) raisins

Preheat oven to 375F (190C or a moderate oven)

Add shortening, sugar and salt to the milk. When the milk mixture is lukewarm, add the yeast cake dissolved in water, the spices and well-beaten egg, and sufficient flour to make a stiff dough. Mix well. Add raisins, cover and let rise overnight. In the morning, divide dough into pieces and form into buns. Place on greased pan an inch (2.5 cm) apart. Let rise, brush over with milk or beaten egg and bake about 25 minutes. When baked, cool slightly and ice with your preferred icing or sprinkle with powdered sugar.

Back to Basics

From The Canadian Basic Question Bank

Exploring the World of QSL Cards:

A gateway to Amateur Radio connections

John Schouten VE7TI has been teaching amateur radio courses for over 20 years, and is the Course Coordinator for Surrey Amateur Radio Communications

In the vast realm of amateur radio, communication goes beyond the exchange of signals; it's about forging connections, building communities, and embracing a shared passion for radio technology. One tangible representation of these connections is the QSL card. In this article, we delve into the world of QSL cards, exploring their history, significance, and the role they play in the global amateur radio community. There are several questions in the Canadian Basic Question Bank related to this subject; here is one:

B-2-9-5 What method is used by radio amateurs to provide written proof of communication between two amateur stations?

A. A radiogram sent over the CW traffic net

B. A packet message

C. A signed post card listing contact date, time, frequency, mode and power, called a "QSL card"

D. A two-page letter containing a photograph of the operator

Understanding QSL Cards

QSL stands for "confirmation of receipt," and QSL cards are postcard-sized confirmations exchanged between amateur radio operators to validate communication. These cards serve as tangible evidence that a radio contact or "QSO" (pronounced cue-so) has taken place. The exchange of QSL cards is a time-honored tradition in the amateur radio community, dating back to the early days of radio communication.

History of QSL Cards

The tradition of confirming radio contacts through cards began in the early 20th century. Amateur radio

operators, often known as "hams," sought a way to verify their communications and acknowledge contacts with fellow enthusiasts. The first QSL cards were simple postcards with handwritten details of the communication, including the date, time, frequency, and call signs of both parties.

Although some QSL cards are plain, they are a ham radio operator's calling card and are therefore frequently used for the expression of individual creativity—from a photo of the operator at their station to original artwork, images of the operator's home town or surrounding countryside, etc. Consequently, the collecting of QSL cards with especially interesting designs has become a frequent addition to the simple gathering of printed documentation of a ham's communications over the course of his or her radio career.

Over the years, QSL cards evolved into more elaborate and artistic forms. Radio operators started incorporating personal touches, unique designs, and even images representing their interests or location. Today, QSL cards are a fascinating blend of art, technology, and personal expression.

Design and Creativity

QSL cards come in various shapes and sizes, but they typically adhere to the standard postcard dimensions. The design of these cards is a reflection of the operator's personality and interests. Some cards feature intricate illustrations, photographs of radio setups, or images that represent the operator's location or hobbies. The creative aspect of QSL cards adds a unique and personal touch to the exchange.

Collecting QSL Cards

Collecting QSL cards has become a hobby within the hobby for many amateur radio operators. Enthusiasts often display their collections proudly, showcasing the diversity of contacts and the global reach of their radio signals. Some operators design and print their cards, while others prefer the convenience of professionally printed cards available from various online services *(see the story on Otto Eppers on page 4)*.

How do the bureaus work?

Amateur radio QSL bureaus operate as a system for the exchange of QSL cards, which are used by radio amateurs to confirm their two-way radio contacts with each other. Here's a simplified explanation of how they work:

Outgoing Bureaus: Individual stations send their QSL cards to an outgoing bureau locally. This bureau bundles all outgoing cards for each country and sends each bundle as a single package, reducing international postage costs.

Incoming Bureaus: These bureaus handle the delivery of cards coming in from other countries. The work is often handled by various radio clubs, organized by call area. You do not need to be a member of a specific organization to use the incoming service.

Sorting and Distribution: Cards received from member societies by the National Incoming Bureau are sorted and forwarded to the Incoming Bureau in each call are.

Delivery: The cards are then distributed to the individual radio amateurs in the various call areas.

It's important to note that some amateurs may indicate that they will not accept cards through the QSL Bureau. Also, bureaus in some countries do not accept cards for non-members of their national society and dispose of undeliverable cards. They are not returned to sender for economical and environmental reasons.

This system allows for a cost-effective and organized method of exchanging QSL cards internationally. However, the rise of electronic confirmation systems and computer-generated QSLs have impacted the traditional QSL bureau system

QSL Bureaus and Direct Exchange

Normally sent using ordinary, international postal systems, QSL cards can be sent either *direct* to an individual's address, or via a country's centralized amateur radio association *QSL bureau*, which collects and distributes cards for that country. This saves postage fees for the sender by sending several cards destined for a single country in one envelope, or large numbers of cards using parcel services. Although this reduces postage costs, it increases the delivery time because of the extra handling time involved. In addition to such *incoming* bureaus, there are also *outgoing* bureaus in some countries. These bureaus offer further postage savings by accepting cards destined for many countries and repackaging them together into bundles that are sent to specific incoming bureaus. Most QSL bureaus operated by national amateur radio societies are both incoming and outgoing, with the exception of the United States of America, and are coordinated by the International Amateur Radio Union (IARU).

The BC Incoming QSL Bureau

The British Columbia Incoming QSL Bureau handles QSL cards being delivered to Amateurs in this province. That would generally be Amateur Stations with a Canadian call-sign starting with VA7 or VE7. This bureau does NOT process cards that are outgoing. Amateurs wishing to send cards should consult the Radio Amateurs of Canada QSL Bureau website.

How do I use this service?

QSL cards sent to the Bureau manager will be sorted for delivery. When a card is received, the recipient's call-sign will be posted on the BC QSL Cards Awaiting Pickup page. If your call is there, you should contact the Bureau Manager using the information provided at the bottom of this page to arrange a delivery method. This may include direct pick-up, delivery, or mailing.

Digital QSLs in the Modern Era

While traditional paper QSL cards remain popular, the digital era has introduced electronic QSLs or eQSLs. Online platforms and services now enable operators to exchange confirmations digitally, streamlining the process and reducing the environmental impact of paper cards. Despite the convenience of electronic options, many operators still cherish the tangible nature of physical QSL cards.

Two systems, QRZ and eQSL, enable electronic exchange of QSLs as JPEG or GIF images which can then be printed as cards on the recipient's local inkjet or laser printer, or displayed on the computer monitor. Many logging programs now have direct electronic interfaces to transmit QSO details in real-time into the eQSL.cc database. CQ Amateur Radio magazine began accepting electronic QSLs from eQSL.cc for its four award programs in January 2009. 10-10 has been accepting eQSLs since 2002.

Another system, the ARRL's Logbook of The World (LoTW), allows confirmations to be submitted electronically for that organization's DX Century Club and Worked

All States awards. Confirmations are in the form of database records, electronically signed with the private key of the sender. This system simply matches database records but does not allow creation of pictorial QSL cards.

Despite the advantages of electronic QSLs, physical QSL cards are often historical or sentimental keepsakes of a memorable location heard or worked, or of a pleasant contact with a new radio friend, and serious ham radio operators may have thousands of them. Some cards are plain, while others are multicolored and may be oversized or double paged.

Usage in shortwave listening

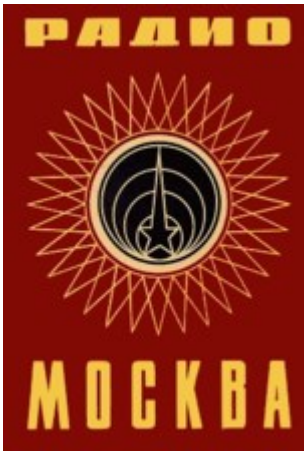
International shortwave broadcasters have traditionally issued QSL cards to listeners to verify reception of programming, and also as a means of judging the size of their audiences, effective reception distances, and technical performance of their transmitters. QSL cards can also serve as publicity tools for the shortwave broadcaster, and sometimes the cards will include cultural information about the country.

The High Frequency Active Auroral Research Program has occasionally requested reception information on its shortwave experiments, in return for which it sent back QSL cards. Standard frequency and time stations, such as WWV, will also send QSL cards in response to listeners reports. Other shortwave utility stations, such as marine and aviation weather broadcasters, may QSL, as do some pirate radio stations, usually through mail drop boxes.

Usage in CB radio

CB radio enthusiasts often exchanged colorful QSL cards, especially during the height of CB's popularity in the 1970s. CB radio operators who met while on the air would typically swap personalized QSL cards which featured their names ("handles") and CB callsigns. Originally, CB required a purchased license and the use of a callsign; however, when the CB craze was at its peak many people ignored this requirement and invented their own "handles".

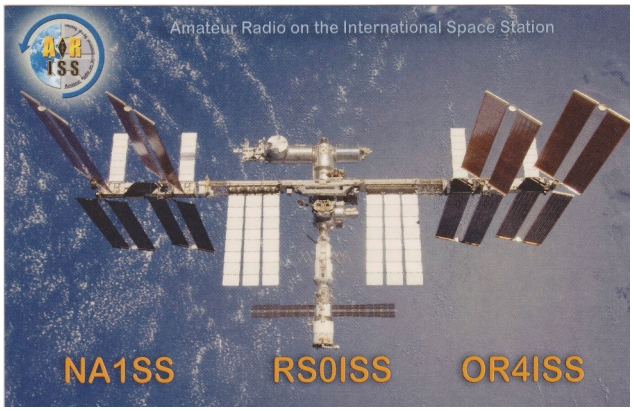
A simple card format might only include the users callsign and/or "handle", home location, and note the date and time of a CB radio contact. More elaborate cards featured caricatures, cartoons, slogans and jokes, sometimes of a ribald nature. As the CB radio fad grew in the U.S. and Canada, a number of artists specializing in artwork for CB QSL cards emerged.



A Radio Moscow QSL card from 1969.

Usage in TV-FM and AM DXing

QSL cards are also collected by radio enthusiasts who listen for distant FM radio or TV stations. With the advent of digital broadcasting there is greater difficulty with the reception of weak TV signals due to the cliff effect;[16] however, AM broadcasting radio stations will often reply to listener reports, particularly if they report receiving them at a significant distance.



QSL cards stand as more than just confirmations of radio

contacts; they embody the spirit of camaraderie and shared enthusiasm within the amateur radio community. As technology advances, the tradition of QSL cards continues to thrive, offering operators a tangible connection to their global counterparts. Whether adorned with intricate designs or simple acknowledgments, QSL cards remain a cherished and timeless aspect of the rich tapestry that is amateur radio.

So back to our question...

B-2-9-5 What method is used by radio amateurs to provide written proof of communication between two amateur stations?

C. A signed post card listing contact date, time, frequency, mode and power, called a "QSL card"

Explanation: A 'QSL Card' is a postcard-sized confirmation of a radio contact.

~ John VE7TI

Calling all New Amateurs:
Get your Name in Lights!

Did you get your Amateur Radio certficate within the past year or two and want to introduce yourself through TCA to the Amateur Radio community? If so we would love to hear from you.

Drop a line to tcamag@yahoo.ca and tell us how you were introduced to the magic of Amateur Radio.

Do you credit any particular Amateur ("Elmer") with getting you started? Which aspect of the hobby do you enjoy so far?

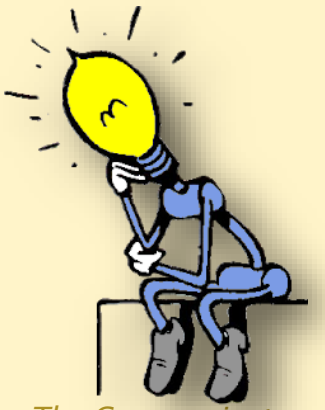
Please be sure to include your name, call sign, date and level of certificate – and don't forget to include a photo or two. We hope to hear from you soon!

Those pesky block diagrams

More information needed? Click: https://bit.ly/SARCcourses

Our new students are often confused by the block diagrams for receivers and transmitters that are part of the Canadian Basic Amateur Radio Question Bank, and it is frequently mentioned in our course feedback as one of the more challenging lessons. As we have previously mentioned, there is a freeware program to practice assembling block diagrams called 'Ham Puzzle available as a free Windows download from Radio Amateurs of Canada at: https://www.rac.ca/wp-content/uploads/2014/04/HAMpuzzle/HAMpuzzle12.zip. It can also run under Wine on a Mac.

Even with Ham Puzzle our students continue to look for a better way to commit these block diagrams to memory. If you, or your club, are involved in instruction and you have a memory aid, we'd love to pass it on to our students.



~ John VE7TI
VE7TI@myrac.ca

SURREY AMATEUR RADIO

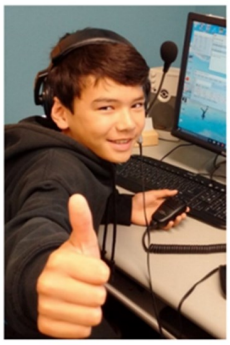
basiccourse

OBTAIN YOUR FEDERAL AMATEUR RADIO CERTIFICATE

7-WEEKS · ON-LINE · $80

the next course starts Monday, March 25—contact sarc@ve7sar.net

Includes classes, a comprehensive manual, videos and the exam fee



- Ideal for outdoors activities. Long range communications anywhere for free without commercial infrastructure
- Enhance your personal and your community's preparedness in an emergency
- Use satellite communication to speak around the world, perhaps even to an astronaut
- Use a radio, computer, smartphone or tablet for free worldwide voice and digital communications
- Participate in 'Radio Sports' like Contesting and Hidden Transmitter Hunts
- Practice an exciting hobby or start a career opportunity

City of Surrey
separ
Surrey Emergency Program Amateur Radio
https://separ.ca/

SARC
Surrey Amateur Radio Communications
http://ve7sar.net

MARCH 2024

SUN	MON	TUE	WED	THU	FRI	SAT
25 Contest: NA QSO Party (RTTY)	26	27 19:30 SEPAR Net 20:00 SARC Weekly Net	28 19:00 SARC Exec Meeting	29 20:00 GOTA Net	Mar 1 Look for the new SARC Communica	2 ARRL International DX Contest (SSE 07:30 Weekly Breakfast Meet [Den 09:30 OTC Activation
3 ARRL International DX Contest (SSE	4	5 19:30 SEPAR Net 20:00 SARC Weekly Net	6	7 20:00 GOTA Net	8	9 RSGB Commonwealth Contest (CW) 07:30 Weekly Breakfast Meet [Den 09:30 Basic Course exams
10 RSGB Commonwealth Contest (CW) Daylight Saving Time starts	11 Commonwealth Day	12 19:30 SEPAR Net 20:00 SARC Weekly Net	13 19:00 SARC Monthly Meeting	14 19:30 Re: FW: NORAC guest speake 20:00 GOTA Net	15	16 BARTG HF RTTY 07:30 Weekly Breakfast Meet [Den 09:30 OTC Activation
17 BARTG HF RTTY St. Patrick's Day	18 St. Patrick's Day (Newfoundland and	19 19:30 SEPAR Net 20:00 SARC Weekly Net	20	21 20:00 GOTA Net	22	23 07:30 Weekly Breakfast Meet [Den 09:30 Build a segmented 7-band w
24	25 19:00 SARC Basic Course	26 19:30 SEPAR Net 20:00 SARC Weekly Net	27 19:00 SARC Exec Meeting	28 20:00 GOTA Net	29 Good Friday	30 CQ WW WPX (SSB) 07:30 Weekly Breakfast Meet [Den 09:30 OTC Activation

Event details: SARC—SEPAR 'Live' calendar link

All contest information: WA7BNM Contest Calendar: Home

A recent Saturday Denny's group. Come join us!

APRIL 2024

SUN	MON	TUE	WED	THU	FRI	SAT
31 CQ WW WPX (SSB) Easter Sunday (regional holiday)	Apr 1 Easter Monday (regional holiday) 19:00 SARC Basic Course VE7RCAF—OTC	2 19:30 SEPAR Net 20:00 SARC Weekly Net	3	4 20:00 GOTA Net	5	6 Tartan Day 07:30 Weekly Breakfast Meet [Den 09:30 OTC Activation VE7RCAF—OTC
RCAF 100th Anniversary Special Event Stations Active						
7	8 19:00 SARC Basic Course	9 Vimy Ridge Day 19:30 SEPAR Net 20:00 SARC Weekly Net	10 19:00 SARC Monthly Meeting	11 20:00 GOTA Net	12	13 07:30 Weekly Breakfast Meet [Den 09:30 OTC Activation VE7RCAF—OTC
RCAF 100th Anniversary Special Event Stations Active						
14	15 19:00 SARC Basic Course	16 19:30 SEPAR Net 20:00 SARC Weekly Net	17	18 20:00 GOTA Net VE7RCAF—OTC For World Amateur Radio Day	19	20 CQMM DX Contest (CW) 07:30 Weekly Breakfast Meet [Den 09:30 OTC Activation VE7RCAF—OTC
RCAF 100th Anniversary Special Event Stations Active						
21 ARRL Rookie Roundup (SSB) CQMM DX Contest (CW) VE7RCAF—OTC	22 St. George's Day (Newfoundland and 19:00 SARC Basic Course	23 19:30 SEPAR Net 20:00 SARC Weekly Net	24 19:00 SARC Exec Meeting	25 20:00 GOTA Net	26	27 07:30 Weekly Breakfast Meet [Den 09:00 'Discover Amateur Radio' Se 09:30 OTC Activation VE7RCAF—OTC
RCAF 100th Anniversary Special Event Stations Active						
28 RCAF 100th Anniversary Special Event Stations Active	29 19:00 SARC Basic Course	30 19:30 SEPAR Net 20:00 SARC Weekly Net	May 1 Look for the new SARC Communica	2 20:00 GOTA Net	3	4 07:30 Weekly Breakfast Meet [Den 09:30 OTC Activation

Announcement by Richmond Amateur Radio Club:

Richmond Amateur Radio Club (RARC) is returning to hosting its 'Discover Amateur Radio' seminar on Saturday, April 27, 2024. The all day in-person event, from 9 AM to 4 PM at the Steveston Community Centre in Richmond, allows radio Amateurs and public participants to interact with invited subject experts giving presentations on specific topics of interest in the Amateur radio hobby.

RARC is calling presenters for the upcoming Seminar. General theme for the event is 'Technology Advancing Amateur Radio.' Audio/visual presentations are 20 to 30 minutes followed by discussions. Objectives of the event are to further interest in Amateur radio for new and experienced radio Amateurs, and also increase awareness Amateur radio activities in the local community.

Updates for the RARC seminar will be posted on:

http://www.richmondarc.ca/discoveramateurradio.htm

Urey Chan, VE7URE
President, Richmond Amateur Radio Club

Profiles of SARC members

Meet Katrina Reynolds VA7WBT

Coordinated by LARRY BLOOM VE7LXB

Hello, everyone! My name is Katrina :)

So, what can I tell you about myself? I was born on the Sunshine Coast and my first memories were of Gibsons, the place where my dad built our first house. Fun fact, he built a boat/barge that was featured in the show Beachcombers (S14 E13). I currently live in Kitsilano, Vancouver but that very well may change this year! My boyfriend Jesse and I are currently renovating an RV which we will use to get out of the city and travel around BC (and even further). My mom and my sister (younger by two years) live in Maple Ridge, where we both graduated high school. My dad has moved out to the South Okanagan. If anyone knows of hams in the area, my dad would be open to getting in contact! He is interested in getting a callsign and would be more motivated if he has someone to talk with over the airwaves.

After working for a time in retail and knowing for sure it wasn't for me, I started post-secondary schooling at BCIT 10 years ago and gained my Red Seal in Machining (CNC Machinist Technician program). I have experience with manual and CNC machines, with my preference being CNC milling machines. At my most recent job at Honeywell, I was fortunate to be given training and then experience doing the actual CNC programming (G-Code) using Mastercam.

Ham radio wasn't really on my radar until I became interested in emergency preparedness and wilderness communications. I had several friends who participated in this and were encouraging their friends to get their license. I thought it might be interesting and enrolled in the SARC online course. Around this time, I became aware that one of the SARC Saturday breakfast meets was followed by an antenna workshop at the OTC (the roll-up J-Pole). Of course, I wanted to introduce myself to the other club members and say hi, as well as meet some of my classmates, but I was not expecting such a tight knit and large group! It left quite an impression on me. A huge bonus was that the workshop afterwards was my introduction to soldering. The help I got from John VE7TI and others really encouraged me. Nowadays I've gotten far

more into soldering, recently doing the Christmas tree LED project for fun, and revamping my boyfriend's portable soldering station with switches and indicator lights.

I've been a ham since the summer of 2022, but didn't really get on the air until I learned about the GOTA program and joined one of Larry's VE7LXB's workshops. This gave me a good reason to improve my antenna setup to be able to reach the Surrey repeater. I ended up making a "non-roll-up roll-up" J-Pole and elevating it as high as possible next to the house. A more powerful transceiver didn't hurt, either (thanks, Andrew VA7LGN!).

In the future, I plan to travel around BC and hope to stay in contact even when far from major cities. I have just recently passed the CW (Morse Code) test, and am in the process of setting up my HF antenna and transceiver. I hope to gain enough experience with mobile HF to be able to set up reasonable temporary base stations wherever we end up in our travels.

I have other hobbies and interests such as food preservation which includes canning, dehydrating, and fermentation. I also took up cycling this winter and I try to go out regardless of the weather, at least when there is no chance of ice. If anyone knows of a way to make the actual bicycle frame act as an antenna, get in contact with me, please! As well, I'm interested in electronics, but of course as a beginner I'm trying to fill a huge knowledge gap. Then there's gardening - for a while I had two large indoor hydroponics towers operating, giving me herbs and veggies, but now I've downsized and only have several countertop systems active right now. I can't wait until spring! I read a lot (I'm presently into the Ringing Cedars of Russia series), play video games (Terraria, Dwarf Fortress, Rimworld), and since I was a child I've always been interested in bugs. I keep several distinct types of isopods (wood bugs), which have a huge variation in appearance and colour, depending on species and where they're from in the world. I also have a terrarium that I stock with local plants and bugs, that I love to observe when I get spare moments.

Whew, I hadn't realized I was that busy! Anyway, that's it for now. Feel free to contact me at VA7WBT@pm.me :)

73,

~ Katrina VA7WBT

Some of Katrina's isopods, and below at the SARC Antenna Building Workshop.

Left: Katrina and SARC President Steve McLean with some HF gear donated to her by Hector MacKenzie VE7DYR (SK). Hector's widow Donna indicated that she would prefer his gear to go to a new ham, preferably a YL..

The Contest Contender

BC QSO Party

February 3 and 4, 2024

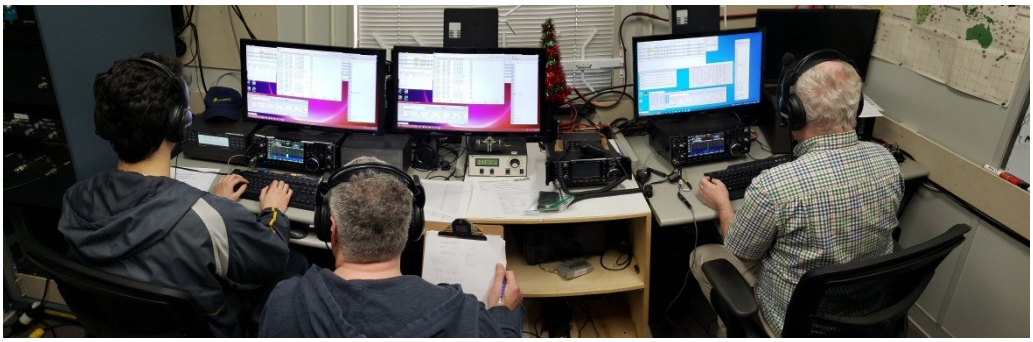
by JOHN BRODIE VA7XB

JOHN BRODIE VA7XB reporting on SARC's contesting efforts.

This year's BC QSO Party was our best ever with a total of 1864 Qs (less a few dupes), compared with last year's 1015 Qs.

A special thanks to our 15-person team – Larry VE7LXB, John VE7TI, Doug VA7JDJ, Kapila VE7KGK, Mike VE7YEG , Steve VE7SXM, Les VA7OM, Andrew VA7LGN, Dmitry VA7DVO, Alex VA7PVC, Adrian VA7YEP, Jeanne VA7QD, Jan VA7VJ, Dino VE7NX and John VA7XB.

We made good use of two IC-7610 transceivers plus the Expert Linear 1.5 on one station and an Acom 1000 amp on the other. It was a good refresher for all the operators on the latter station to relearn the procedure for manually tuning a tube amp. Both the tri-bander beam and the 80-40 wire antenna were connected to radios via our triplexer/ diplexer/bandpass filters for signal separation.



Score - 1,851,742 Points

Contest: BC QSOPARTY

Band	Mode	QSOs	Pts
3.5	LSB	8	16
7	CW	31	124
7	LSB	84	168
14	CW	213	852
14	USB	575	1146
21	CW	233	932
21	USB	549	1096
28	CW	171	684
Total	Both	1864	5018

Score: 1,851,742
1 Mult = 5.1 Q's

We experienced one minor problem … N1MM on the 40m station kept locking up and repeated reboots were necessary when the other station was on 80m, until its power was reduced to 100w. On one occasion, this also happened when the second station was on 20m. Next time we will pay more attention to RFI suppression on computer cables and see if we can put an end this annoyance.

Otherwise all combinations of 20, 15 and 10m were without problems.

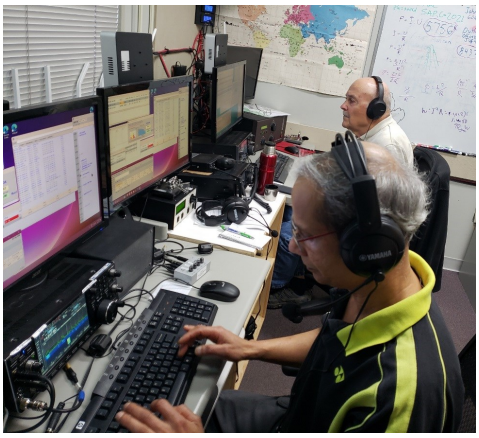
With two recent contests under our belts where we used high power on both stations, we can now be confident of our ability to operate with minimal, or at least manageable, mutual interference.

Most noteworthy "unsolicited" DX contact was Cyprus H25A on CW 21.035 MHz Sunday morning.

Most "interesting" contact was by Steve on 14.385 MHz SSB Saturday with Gabe NJ7H from a DHL Courier Boeing 767 flying at the time over Tennessee *[photo right]*.

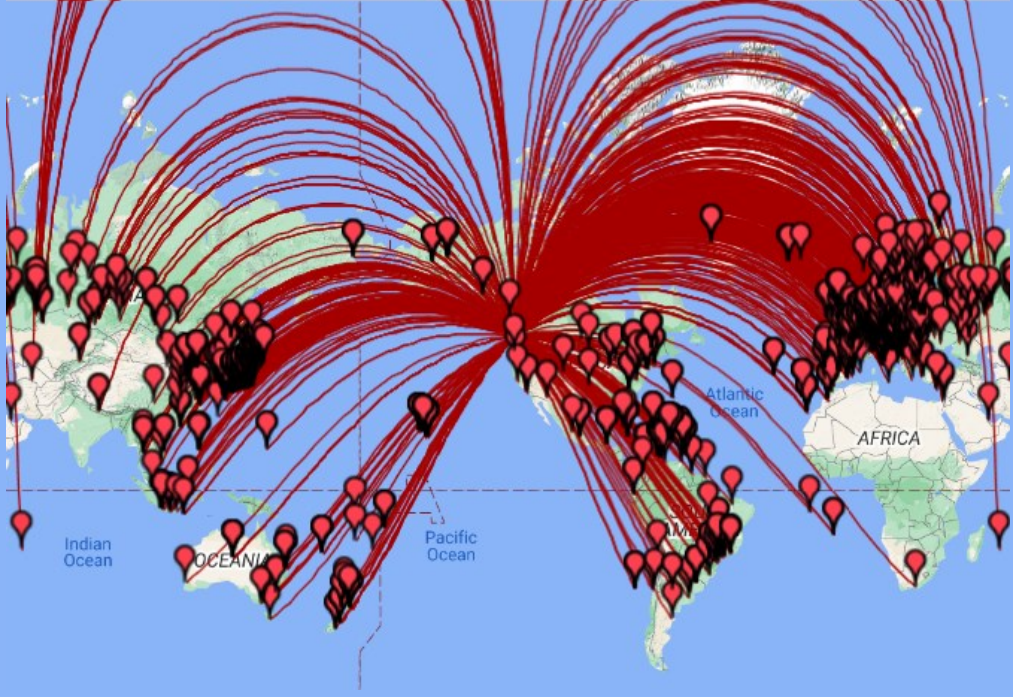
Most gratifying of all was that our newest operators, Adrian and Alex, were able to quickly get the feel of contesting and make significant contributions to the score while having (what appeared to be) "fun".

~ John VA7XB
Contest Coordinator



Boeing 767 instrument cluster showing the HF radio.

The Contest Contender



ARRL DX Contest (CW)

17—18 February 2024

by JOHN BRODIE VA7XB

JOHN BRODIE VA7XB reporting on SARC's contesting efforts.

Thanks to our 5-man team of Slawa VE7LWW, Dino VE7NX, Jan VA7VJ, Les VA7OM and John VA7XB (that's me) who participated in the DX CW contest on the weekend of 17-18 Feb to make 1602 Qs in total with exactly 100 countries worked.

If you are a regular DX contester, you will know that this contest is strictly DX, i.e. no points are awarded for contacts within North America.

Most interesting contacts were: FR8UA Reunion Island, ZS2M South Africa, EZ6X Turkmenistan, A71WW Quatar, UN4Q Kazakhstan, 4X7M & 4X6FR Israel and 9N7AA Nepal.

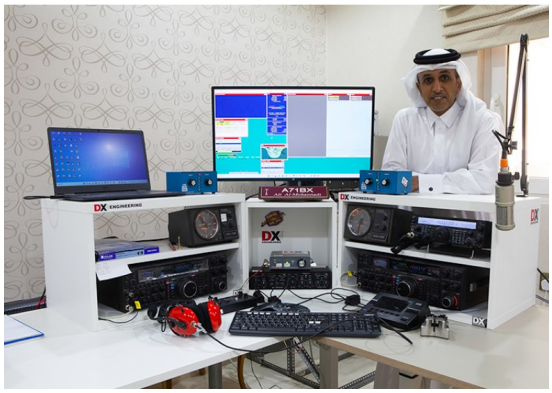
Many are saying that we are near the peak of the sunspot cycle … wondering how much longer the good conditions will last, but this contest saw vigorous action on all 5 bands.

Contest Online ScoreBoard 19 Feb 2024 20:44 UTC ARRL DX CW SFI:157 Kp:0

Closed: ARRL DX CW Go Highest rate: 446 q/h by E70T Powered by ICOM

Home Profile Filter View Clear Filter Breakdown Clubs Teams Manual post Archive Supported contests Help with logger set up Blog

M/S HP		Score	QSO	States/Prov/Countries		Log
1	W2FU	10,988,640	6,253	587	North Coast Contesters	N+
2	N4P	7,751,052	4,592	564	Deep Dixie Contest Club	N+
3	ZF1A	6,442,926	6,040	358		DX
4	K3AJ	6,243,957	3,039	543	Potomac Valley Radio Club	N+
5	AA9A	6,016,440	3,620	554	Northeast Wisconsin DX Assn	N+
6	K8AZ	5,418,360	3,117	580	North Coast Contesters	WT
7	VP2MER	4,935,210	4,635	355		N
8	K1ESE	4,279,875	2,825	505	Yankee Clipper Contest Club	N+
9	W7VJ	3,506,486	2,634	444	Bavarian Contest Club	N+
10	VE7SAR	1,409,562	1,602	297	Surrey Amateur Radio Communications	N+



A71WW Qatar

UN4Q Kazahkstan

Coming up next are:

Mar. 2-3 ARRL International DX Contest (SSB)

Mar 9-10: Commonwealth Contest (CW)

Mar. 30-31 CQ WW WPX (SSB)

April 20-21: CQMM DX Contest (CW)

April 21: ARRL Rookie RU (SSB)

SARC will probably be using the callsign VE7RCAF for the April contests, so watch for us.

~ John VA7XB

4X6FR Israel. His bandpass/triplexer looks just like the one we made.

1	3D2F	Fiji	1
2	3W	Vietnam	4
3	4U1U	UN New York	3
4	4X	Israel	2
5	5B	Cyprus	2
6	5W	Samoa	4
7	8P	Barbados	5
8	8R	Guyana	2
9	9A	Croatia	13
10	9N	Nepal	2
11	9V	Singapore	1
12	9Y	Trinidad and Tobago	1
13	A3	Tonga	1
14	A7	Qatar	1
15	BY	China	38
16	CE	Chile	6
17	CN	Morocco	7
18	CO	Cuba	3
19	CT	Portugal	5
20	CT3	Madeira	5
21	CU	Azores	4
22	CX	Uruguay	5
23	DL	Deutschland	48
24	DU	Philippines	5
25	E7	Bosnia and Herzegovina	3
26	EA	Spain	21
27	EA6	Baleares	3
28	EA8	Canary Islands	8
29	EA9	Ceuta & Melilla	1
30	EI	Ireland	3
31	ES	Estonia	3
32	EU	Belarus	7
33	EZ	Turkmenistan	1
34	F	France	32
35	FK	New Caledonia	4
36	FR	Reunion	1
37	FY	French Guiana	1
38	G	England	22
39	GM	Scotland	8
40	GU	Guernsey	1
41	GW	Wales	5
42	HA	Hungary	18
43	HB9	Switzerland	4
44	HC	Ecuador	2
45	HK	Colombia	3
46	HL	South Korea	17
47	HS	Thailand	5
48	I	Italy	36
49	J3	Grenada	1
50	JA	Japan	751
51	JT	Mongolia	1
52	KH0	Northern Mariana Islands	2
53	KH6	Hawaii	22
54	KL7	Alaska	14
55	KP2	Virgin Islands	5
56	KP4	Puerto Rico	8
57	LA	Norway	7
58	LU	Argentina	6
59	LX	Luxembourg	1
60	LY	Lithuania	6
61	LZ	Bulgaria	3
62	OE	Austria	2
63	OH	Finland	17
64	OK	Czech Rep.	16
65	OM	Slovakia	7
66	ON	Belgium	12
67	OX	Greenland	3
68	OZ	Denmark	3
69	P4	Aruba	7
70	PA	Netherlands	7
71	PJ2	Curacao	5
72	PJ4	Bonaire	1
73	PY	Brazil	24
74	PZ	Suriname	5
75	S5	Slovenia	12
76	SM	Sweden	
77	SP	Poland	
78	SV	Greece	
79	T2	Tuvalu	
80	TA	Turkey AS	
81	TF	Iceland	
82	TI	Costa Rica	
83	UA	Russia EU	
84	UA0	Russia AS	
85	UA2	Kaliningrad	
86	UN	Kazakhstan	
87	UR	Ukraine	
88	V3	Belize	
89	VE	Canada	
90	VK	Australia	
91	VP2M	Montserrat	
92	VP5	Turks and Caicos Is	
93	VP9	Bermuda	
94	VR	Hong Kong	
95	W	USA	
96	XE	Mexico	
97	YB	Indonesia	
98	YL	Latvia	
99	YO	Romania	
100	YU	Serbia	

January 2024

SARC General Meeting minutes

January 9, 2024

Recording Secretary JEREMY MORSE VE7TMY

SARC General Meeting Minutes 24.01.09

Attendees: 33 via Zoom

Start Time: 7:03pm

Location: Surrey Fire Training Centre

Welcome

- Welcome by Steve McLean VE7SXM

Presentation

- **Scheduled Presentation by Kevin McQuiggin VE7ZD/KN7Q**

  on GNUradio - building radio circuits on your computer. Kevin's presentation is available on video at: https://youtu.be/OyJmGUyrbho

Announcements

- Feb General Meeting Moved to Feb 21st to avoid Valentine's Day. Guest speaker will be Keith Witney, VE7KW on DX'ing. Keith is a member of the RAC Board of Directors and is the British Columbia and Yukon Region Director. Keith is an accomplished DX'er and contester, and he was the co-recipient of the RAC Amateur of the Year Award for 2017. This will be on Zoom.
- March General Meeting, likely at Fire Training Centre - topic TBD
- Saturday Breakfast 7:30am – 9:30am and OTC 5756-142nd Street (10 am to 12)
- Christmas party, WSPR Workshops and Soldering Projects photos shared

Committee Reports

- **Financial – (Steve VE7SXM)** Profit and Loss YTD shared on screen.
- **Nets – (Reg VA7ZEB)** All nets are going well
- **SEPAR – (Gord VA7GK)** Volunteers have been working on improving the radio room at Fire Hall 1 including software updates,

antenna repairs and physical cleaning of the room.

- **OTC – (Gord VA7GK)** Gord and Steve met with Mark and Shelly from SFS to review the status of the building and our usage. Reg is working on BCWarn (previously managed by Drew/Jason).
- **GOTA/Elmers – (Larry VE7LXB)** Approx 60-65 members in the GOTA group.
  - GOTA Net (Thursday night) presentations on a specialized topic are done on the 1st Thursday of each month. On Feb 6 John VA7XB will host a new topic. Approx 15 check-ins per net.
  - Larry gets 5-10 Elmer questions per week
  - Soldering workshop was successful with a waitlist for future soldering workshops

  Future workshops
  - Feb 24 HF basics
  - Mar 20 5-band segmented wide band antenna (weather permitting)
  - Feb Build an Amp for your HT (?)
- **Membership – (John VA7XB)** At last count, we have 119 members in good standing and have regained most of those that were lost at the end of the year

Contests – (John VA7XB)

- RAC Winter Contest 30 Dec 2023 – With 1551 contacts and a claimed score of 521,220 this was our best effort ever. Operating HP on both radios. Interstation Interference was experienced only when radios were on 80 or 40m which required lowering power on one radio. Seems to be a harmonics issue.
- Upcoming Contests
  - 13-14 Jan NA QSO Party (CW)
  - 20-21 Jan NA QSO Party (SSB)
  - 3-4 Feb BC QSO Party (CW, SSB)
  - 10-11 Feb CQ WPX Contest (RTTY)
  - 17-18 Feb ARRL International DX Contest (CW)
  - 24-25 Feb NA QSO Party (RTTY)
- **Repeaters – (Steve VE7SXM)** No issues
- **Ham Class (John VE7TI)** The next basic course starts Mon Jan 15 with 35 students signed up, some from as far away as Ontario.
- **CW Class (Steve VE7SXM)** 2 people have passed their exam. The remaining students will be examined when ready.

Old Business

- Workshops
  - NTP/GPS Server (Dino VE7XDT)
  - Would be desirable for DXpeditions
  - Limited to 10 kits approx $100 each
  - Those who wish to build, contact John VA7XB va7xb@myrac.ca
- OTC Outside Work
- Will continue roof cleaning, as the roof drains tend to plug up this time of year
- No other OTC activities planned

New Business

- **QSL Bureau – Shawn VE7BD**
  - Those interested in using the in-coming QSL bureau are asked to contact Shawn ve7bd@myrac.ca
  - VE7SXM, VA7XB, VA7GK, VE7TI, VE7XDT requested to be on the list

Steve moved the meeting to be adjourned at. 9:01pm Seconded by John VA7XB. Carried

Meeting adjourned at: 9:01pm

~ Minutes prepared by Jeremy Morse VE7TMY

February 2024

SARC General Meeting minutes

February 21, 2024

Recording Secretary JEREMY MORSE VE7TMY

SARC General Meeting Minutes 24.02.21

Attendees: 40 via Zoom

Start Time: 7:03pm

Location: Surrey Fire Training Centre

Welcome

- Welcome by Steve McLean VE7SXM

Scheduled Presentation

- **Keith Witney VE7KW** on DX'ing. Announcements

Announcements

  - The March 13th General Meeting will be at the Surrey Fire Training Centre – Guest speaker will be Doug Pattengale VE7CQT on digital mobile radio, how it works, its advantages and ability to make worldwide contacts on VHF-UHF. Doug will talk about both mobile and portable units on the market, add-ons, what to look for, what to avoid, and how to get the best results.
  - Saturday Breakfast 7:30am – 9:30am Denny's at 68th and King George Boulevard
  - OTC to follow – 5756-142nd Street open from 10am to 12pm

Committee Reports

- **Financial Report** In absence of the Treasurer, Steve VE7SXM presented the Profit & Loss and Balance Sheets to the group for review
  - e-transfers are now available and preferred over PayPal (See website for info)
- **Nets and Repeaters (Reg VA7ZEB)** Firstly, Steve expressed a big thankyou to Reg, Horace and others for all the work on BC Warn retrofit
  - Fire Hall 1 and Concord tower have had several updates. Old BC Warn equipment

was retired, with 3850x Cisco Routers donated to us. A wireless access point is now available at Concord to assist where cell coverage is absent. Remote management is soon to be set up. Fire Hall 1 has some donated monitors and windows 10 was installed on a PC. A working phone is now set up. The HF transceiver at Hall 1 is being worked on by Gord.

  - At Concord, WiresX was moved over to BCWarn by Horace. Many new high-rise buildings block the line of sight to Hall 1.

- **SEPAR & OTC (Gord VA7GK)** The SEPAR Trailer work will begin once the weather improves
  - Will be testing a new antenna on the south repeater tower to improve its coverage
  - OTC has been very active with various training, kit building and drop-ins
- **GOTA/Elmers (Larry VE7LXB)** The GOTA initiative was started 1 year ago in March 2023. Look for an article in the March-April Communicator. Planned workshops include "How to get started in HF" and soldering workshops. Many of those signing up are not new hams.
  - Currently we have 60-65 active GOTAs
- **Membership (John VA7XB)** Paid memberships are now at 137, which is an increase of 19 since last month, resulting from ham class signups following their free 1 year.
  - All 2022 students who have not renewed were removed from the list.
  - Membership dues for all will be owing May 31st, which is the end of the fiscal year
- **Contests (John VA7XB)** John is looking for a volunteer to share in hosting contests including setup and supervision. Contact John if interested.
  - Past Contests: Feb 3-4 BCQP – over 1800 contacts by 15 operators including some first-timers (our best ever) and Feb 17-18 ARRL CW DX contest – 1602 contacts with 4 operators
  - Future Contests: We will endeavour to do as many as possible, including Feb 24-25: NA QSO Party RTTY; Mar. 2-3 ARRL International DX Contest (SSB); Mar 9-10: Commonwealth Contest (CW); Mar. 30-31 CQ WW WPX (SSB); April 20-21: CQMM DX Contest (CW); April 21: ARRL Rookie Roundup (SSB)
- **Repeaters (Steve VE7SXM)** Thanks to Horace for the good work performed on the repeaters
- **Ham Class (John VE7TI)** Exams are scheduled for March 5th evening and Saturday March 9th
  - On March 25th the Spring class starts
  - An accredited student summer school course at Kwantlen Park High School is being planned
- **CW Class (Steve/John VA7XB)** 4 have passed their exams recently.

Old Business

- NTP/GPS Server Workshop is in planning
- Surface Mount Workshop – John/Dino are looking for Interest. This will require an advanced skill level
- WSPR Project – images of 40m and 80m WSPR reports for our wire antenna were displayed
- Projects planned (outdoors) include Separ trailer and BCWarn upgrades

New Business

- **VE7RCAF (John VE7TI)** April 1-30 special event to commemorate 100th centenary of the RCAF. The organizers are soliciting operators to operate from home or from the SARC station.
- Foxhunt May 11th – volunteers are needed to organize the event including BBQ

- Field Day 2024 – Contact Andrew VA7LGN at: va7lgn@gmail.com if you can assist with planning
- OTC – Directors are working to improve the sound isolation between the training and discussion areas

Adjournment

- Steve VE7SXM moved the meeting be adjourned at.8:58pm. Seconded by Andrew VA7LGN. Carried
- Meeting adjourned at 8:58pm

~ Minutes prepared by Jeremy Morse VE7TMY

Our February 2024 presenter was Keith Witney - VE7KW

Keith was first licensed in 1964 as VE4EI, Keith holds VE7MID and VE7KW and has operated on many DXPeditions. Keith has a modest home station but has had the privilege of being allowed to participate at several contest stations. Keith is a multi-mode op, but prefers CW.

A retired electrical engineer, Keith likes designing HF antenna systems and messing with technology in general. He also enjoys whitewater kayaking and has used kayaking as well as amateur radio to justify his foreign travel. Keith was the principal organizer for the VE100VIMY operations across all 14 call areas of Canada and was responsible for the technical aspects of the TM100VIMY operation. He was the co-recipient of the RAC Amateur of the Year Award for 2017.

Keith has also participated in ARDF (Amateur Radio Direction Finding) events and was an international juror at the last World Championships in Bulgaria and Korea. Keith has a modest station but is active on most modes mainly for Dxing or contesting.

Keith is a member of the RAC Board of Directors and is the British Columbia and Yukon Region Director.

Training: [left] john VA7XB conducts training for the RTTY contest.

[right] The "Getting started in HF' workshop was so popular that two classes had to be scheduled

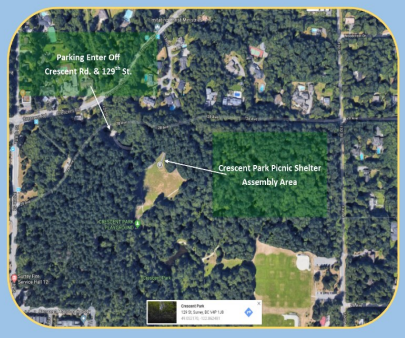
A FREE EVENT • OPEN TO THE PUBLIC

SURREY AMATEUR RADIO foxhunt

Amateur Radio Direction Finding (ARDF) is also known as Fox Hunting.
It is an internationally recognized radio sport using a receiver as a direction finder to locate hidden transmitters.
No radio licence is required · Suitable for the whole family

Saturday May 11, 2024 at 9am

Crescent Park Picnic Area, South Surrey



Pre-hunt Coaching, Registration & Instruction 9am

Fox Hunt 10am—Noon

For the exact location scan the QR Code

Both 2m and 80m foxes

If you are a beginner and do not have a receiver, come anyway, we have loaner equipment, or we can team you up with someone experienced.

Talk-in 147.360+ (110.9 Tone)

All are welcome, but we ask that you RSVP to mail@ve7sar.net

It's a great family activity and so simple, she can find the foxes!

SARC

Field Day 2024

Field Day is June 22-23, 2024

By ANDREW ELGIN VA7LGN

It's that time again! Yes, as of the time of writing, **Field Day** is only 120 days away! Field day is the largest on air event in North America with more than 40,000 radio amateurs participating.

Individuals and clubs from coast to coast will set up temporary transmitting stations at parks, fields, and community centres, and attempt to contact as many other stations as possible within a 28 hour period. Field day isn't just a contest though - it's a time to practice emergency procedures, learn more about communication techniques, and to demonstrate our abilities to our communities, family, and friends.

This year Field Day will occur on June 22nd and 23rd (the fourth full weekend of June) but planning a successful field day starts early! We are currently looking for 4-5 volunteers for the SARC-SEPAR field day committee who will help to create a successful plan for this event. As we get closer to June we'll be looking for more volunteers to help with everything from contest station management, to meal planning, and also looking for control operators to represent VE7SAR on air.

If you're interested in volunteering for the field day committee please email VA7LGN@gmail.com and tune in to the SARC blog for more information!

~ Andrew VE7LGN

SEPAR

More updates at firehall one

by GORD KIRK VA7GK

In the last update we talked about the ongoing work updating our radio room at Surrey Fire Hall #1. Again our amazing team has continued to work on small but important tasks. We have all of the VHF/UHF and 220 radios functional and reprogrammed. Our computer is updated and working. There are still a couple of remaining tasks. Our HF radio still needs the roof top antenna serviced. We have permission to go to the roof top to to make the necessary repairs. This does need to be done during business hours and we are waiting for some improvement in the weather to get this task completed.

The other large project is to get our Digital communications updated and working. Fire Hall #1, our SEPAR trailer and the Grab and Go Kits all have SCS Pactor modems installed. This part of our renewal will see the computers updated and our Winlink stations revitalized.

This will also lead to a training focus to ensure our members are able to work with Winlink and are confident in using the program to pass messages.

In SEPAR we also are part of the BC Wireless Amateur Radio Network - BCWARN (https://bcwarn.net/). Our primary repeater site hosts a link to form part of the regions network. This allows us to connect Fire Hall #1 and our trailer to this network. From this we have a phone system to other EOC's and a connection to the internet outside of our local area. Again with the help of the BCWARN technical team and our SEPAR Team

Gord Kirk VA7GK is a SARC Director and the SEPAR Coordinator

led by Reg VE7ZEB the switches for this system have been replaced and upgraded, our phone and the data via BCWARN network is once again tested and functional.

We have both primary and back up switches installed and tested. The Yeasu Fusion repeater with Wires-X is also now using the internet via BCWARN. We hopefully will see further expansion of our use of this system within Surrey and the surrounding areas.

BCWARN

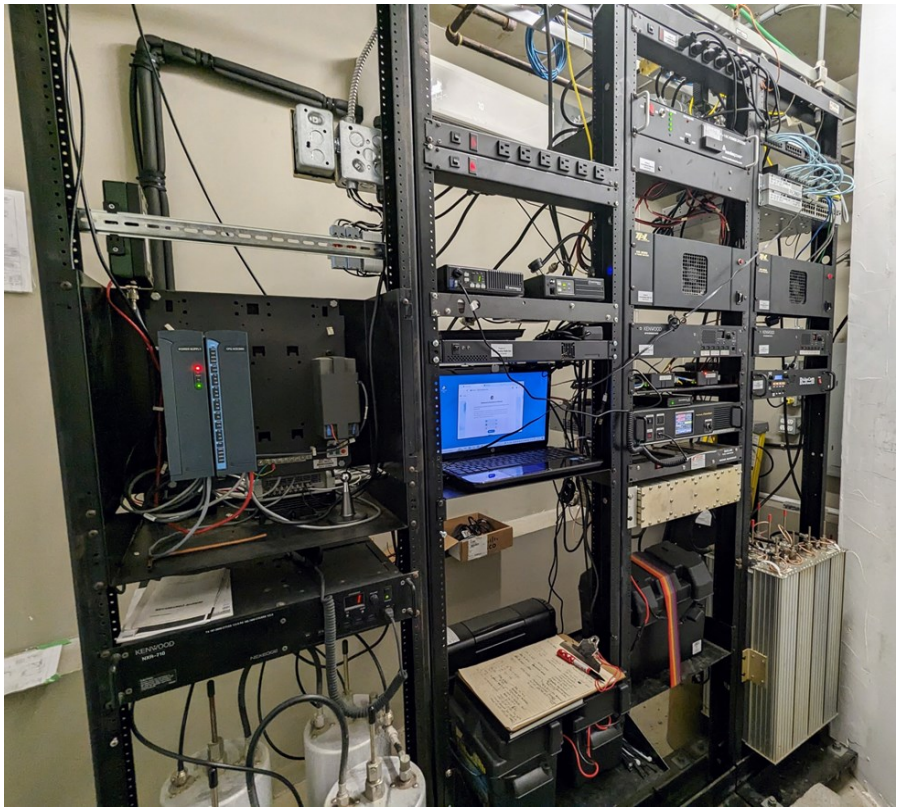
“From the BCWARN website here is the description of what this network is designed for.

BCWARN is an association of amateur radio groups sharing the common goal of building a high-speed data network, capable of operating independent of commercial "internet" providers.

One of the goals of BCWARN participating groups is to assist in connecting Emergency Operations assets (EOC's, PEP HQ's, reception centers, etc) together with a common, independent network.

The BCWARN network allows its users to exchange information between the connected sites such as email, internet-chat, remote printing, VoIP telephone and fax calls, and virtually anything else that you would use the "internet" for, but without having to rely on commercial network infrastructure.

Note however, that during the majority of the time, there are gateways to the "internet" that allow traffic from BCWARN sites to communicate all over the world. However, should a major incident cause those gateways to fail, the BCWARN sites will still be able to communicate with each other and exchange their information.”



SARC VE7RSC Repeater Site

This picture is our North Repeater site with the new BCWARN repeater equipment installed.

Next Steps

As the weather begins to improve we look forward to completing the rooftop antenna work. We will also continue on the SEPAR Trailer work we began last year. This will include updating the BCWARN equipment in the trailer, updating the radios and computers. This will also see the digital equipment upgraded.

Our weekly nets, and Saturday drop in sessions continue to be well attended. We continue to see membership growth and interest from our program volunteers.

Kjeld Frederiksen VE7GP SK

It is with sadness we mourn the passing of one of our oldest SEPAR and SARC members.

Kjeld Frederikson VE7GP joined SEPAR prior to Oct 2007. He was a very active participant and in earlier years hosted one of the original club repeaters at his home. He also helped with the build out of our SEPAR trailer. It was an honour to have him spend his time with us and to help build a safer community. He will be missed.

If you would like more information on the Surrey Emergency Program please reach out.

~ Gord Kirk VA7GK
SEPAR Coordinator.

separ
Surrey Emergency Program Amateur Radio

Regional Frequency Plan

Name	Frequency	Offset	CTCSS
VE7RSC (Primary Repeater)	147.360	+0.600	110.9
VE7RSC (Secondary Repeater)	443.775	+5.0	110.9
VE7RPT (Primary Regional Repeater)	146.940	-0.600	Optional 136.5 Rcve
Simplex 1	(VHF) 146.550		
Simplex 2	(VHF) 147.420		
Simplex 3	(UHF) 446.550		
Simplex 4	(UHF) 447.425		

Other frequencies in the Greater Vancouver area:

Primary: Coquitlam/Abbotsford 146.430
Primary: Inter-Municipal Group 3 146.445
Primary: Vancouver; Mission; Sec. Coquitlam 146.460
Primary: Kent-Mission; Sec. Richmond 146.475
Primary: Inter-Municipal Group 2 146.490
Primary: New West; Sec. Richmond 146.505
National Calling / FM Simplex Group I 146.520
Primary: North Shore; Port Coquitlam 146.535
Primary: Bowen Island; Surrey 146.550
Intermunicipal Group 1 Coordination 146.565
Primary: Lions Bay/Vancouver/Delta/Langley 146.580
Primary: Port Moody; Sec: Burnaby 146.595
Secondary: Vancouver/Surrey 147.420
Secondary: Vancouver (UBC) / Maple Ridge 147.450
Primary: White Rock/Chilliwack; Sec. No. Shore 147.480
Secondary: Burnaby/Pitt Meadows 147.510
Primary: Delta; Sec: Abbottsford 147.540
Primary: Hope; Sec: Delta; ALSO EMBC 147.570

SARC news…

Kjeld Frederiksen VE7GP SK

It is with heavy hearts that we announce the passing of Kjeld Frederiksen, beloved husband, father, morfar, farfar, brother, uncle, and friend. Kjeld passed away peacefully surrounded by family after bravely facing a brief battle with cancer.

Kjeld was born in Denmark and immigrated to Canada with his wife Inge and their three children in 1968 fulfilling a childhood dream to move to North America.

Kjeld's legacy is carried on by his beloved wife, Inge, with whom he celebrated nearly 65 years of marriage. Together they raised a loving family leaving an indelible mark on his three children, Soren (Cindy), Henriette (Lothar), Peter (Melinda), and his three grandchildren, Soren Christopher, Jeff (Chi), and Amy (Glenn) all of whom will miss him greatly.

A man of unwavering faith, Kjeld was actively involved in Granly Danish Lutheran Church for 50 years until it closed in 2022. Kjeld was trained as an Architect in Denmark and was a skilled carpenter and craftsman who designed and built four of the family homes. He could build and fix anything and he enjoyed tinkering and restoring all manner of antique and vintage items.

Kjeld earned his license as a ham radio operator and was a long-time active member of SARC (Surrey Amateur Radio Club). He was also proud of his role with SARC in supporting S.E.P.A.R. (Surrey Emergency Program, Amateur Radio). In his retirement years Kjeld and Inge enjoyed many years of travelling across western North America in their motorhome going as far south as Galveston, Texas and as far north as Inuvik, NWT.

Kjeld's warm presence and cheeky sense of humour will be missed by all who knew and loved him. A celebration of life will be held offering an opportunity for family and friends to join together in commemorating a life well lived.

Kjeld was not only a ham buddy but he was also a personal friend who Marion and I will miss very much.

After we retired we spent many days and weeks with Kjeld and Inge down south during the winters. We have great memories of the time spent together. Of course we enjoyed ham radio from W6 and W7 land as we both had stations in our RV's.

Kjeld was dedicated to the Surrey Amateur Radio Club having been a member since the club's beginnings. His contributions were significant to the growth of the club. He generously provided time, knowledge and materials for the betterment of SARC and to SEPAR.

Activities such as social events, vacations, field days and just hanging out with Kjeld over the past 45 years mean so much to me. I will always be thankful for the time we spent together.

He was one of the best and will be missed.

~ Fred VE7IO

Reprint Policies

These are policies for reprints from The Communicator, a bi-monthly journal about amateur radio and other topics published by Surrey Amateur Radio Communications (SARC).

This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. All rights are reserved.

You may use articles authored by SARC members for your club newsletter or other amateur radio publication, provided that the purpose is non-commercial, you credit the author, and provide a link as follows: https://ve7sar.blogspot.com/search/label/SARC%20Communicator. If our article indicates it is from a source outside of SARC, we cannot transfer that right, and you must seek permission to re-publish from the original source. We appreciate being notified via email to communicator@ve7sar.net if one of our original articles has been re-printed elsewhere.

We welcome your comments and feedback

Please consider leaving a comment via email to communicator@ve7sar.net, or on our blog site https://ve7sar.blogspot.ca or, better yet, contact our authors directly, so they know someone is out there reading our publication.

Social Reminder

The Saturday weekly social gathering is once again 'on' at the Denny's Restaurant, 6850 King George Blvd., Surrey BC from 07:30—09:30. All are invited. Afterwards, we will host workshops and will be available to invigilate Amateur Radio exams at the OTC, 5756—142 Street, Surrey from 10-noon.

Bring your ham issues, our Elmers will try to help you sort them out.

An open community of common interests

The Orca DX and Contest Club (Orca DXCC) was established in Fall 2010 to serve as a community open to all amateur radio operators in BC or the BC-Washington border region with an interest in DXing and contesting. ORCA-DXCC is an association of licensed Amateur Radio Operators, specifically focused on the HF DX'ing and Contesting aspects of Amateur Radio.

ORCA-DXCC provides a foundation and opportunity for fellowship, understanding, encouragement, development, and support of like-minded operators.

We share unique opportunities and challenges in "working the world" from the top-left corner of North America. The Orca DXCC brings together active radio operators to share their experiences, and provide encouragement and mentoring to all who strive to one day "work 'em all" from here.

Join the club

Here's how to become a member.

The Orca DXCC holds regular meetings in the Lower Mainland (Vancouver, B.C. area). Read about recent meetings, and previous meeting recaps in The Orca Report.

Our Aim

The aim of the club is to provide a forum and organization for Amateur Radio operators primarily located in British Columbia who are interested in DXing and Contesting.

Guiding principle: We believe there is no truer demonstration of the magic of Ham Radio than the act of DXing. We know why we do it and we know why we love it. DXing and contesting are noble pursuits which deserve a foundation of fellowship, understanding, encouragement, tolerance and te support of like-minded believers.

Orca DXCC will provide this foundation for its members to help them pursue their goals and build on this belief.

Ham Leftovers...

WWV: All time, all the time

Of all the rabbit holes we technical types tend to fall down, perhaps the one with the most twists and turns is: time. Some of this is due to the curiously mysterious nature of time itself, but more has to do with the various ways we've decided to slice and dice time to suit our needs. Most of those methods are (wisely) based upon the rhythms of nature, but maddeningly, the divisions we decided upon when the most precise instrument we had was our eyes are just a little bit off. And for a true time junkie, "a little bit off" can be a big, big problem. See this article for more.

APRS radio to SMS

Thanks to Michael Phelps NA7Q, we're back in the APRS Radio-to-SMS business! "SMSGTE" is currently offline, so let's use the new "SMS" gateway instead. Two-way text messaging between APRS-enabled radios and phones is now simple and easy.

Start here, http://theconnectdesk.com/SMS Be sure to "opt-in" any phone numbers you'll be using. The YouTube video explains the project: https://youtu.be/pYsMJ41u7h8.

Looking inside my RG-213 coaxial cable

I bought 30m of RG-213 cable for my antenna homebrewing projects, with PL 259 connector pre-crimped at both ends. I did not find the performance good so I decided to cut it into two halves. The shield had the colour of copper, but cut ends were glistening white. Similarly, the thick wires of the inner conductor also had ends that were glistening white. Sound familiar? Take a look at this YouTube video: https://youtu.be/iXIrukucO-c

I found the coolest ham radio shack!

I think I may have found THE COOLEST mobile ham radio shack in the parking lot at Orlando HamCation! See it at: https://www.youtube.com/watch?v=RAn7I6xvFTs

This car is LOADED down with several ham radios and antennas that Scott Farrell (KE4WMF) has managed to fit inside of his 2017 Volkswagen Golf GTI, making for an awesome rig for both performance driving and amateur radio fun on the go!

Canadian Geographic looks at ham radio

Canadian Geographic did a very nice article about Amateur Radio. You car read it at: https://canadiangeographic.ca/articles/ham-radio-and-the-world-of-amateur-radio-operators/

We're QRT

The US Amateur Radio Emergency Preparedness Act

And similar implementation in Canada

by JOHN SCHOUTEN VE7TI

John Schouten VE7TI is a Director with Surrey Amateur Radio Communications

This month in the United States, Senators Roger Wicker and Richard Blumenthal introduced the Amateur Radio Emergency Preparedness Act. This legislation aims to enhance communication options during natural disasters by giving amateur radio operators the right to install their antennas and serve their communities.

Senator Wicker said:

"Because communication during natural disasters is often hindered, we should be making every attempt to give folks more options. Reliable access can make the difference between life and death in an emergency. Our legislation removes roadblocks for amateur radio operators looking to help their friends, families, and neighbours.

Our measure will help clarify the rules so ham radio enthusiasts can successfully continue their communications. In the face of emergency or crisis, they help provide vital, life-saving information that allow listeners to properly and safely respond, but prohibitive home association rules and confusing approval processes for installing antennas have been an unnecessary impediment"

Senator Blumenthal said: "The Amateur Radio Emergency Preparedness Act resolves these bottlenecks and ensures that radio operators can function successfully."

The Act

The Act addresses the issue of homeowner association rules that often prevent amateur radio operators from installing outdoor antennas on residential properties. These antennas are crucial for emergency and disaster communication, especially in states like Mississippi and Connecticut that are prone to hurricanes.

The Act proposes to limit the scenarios in which homeowner associations can ban, prevent, or

require the approval of the installation or use of amateur radio antennas. It also provides amateur radio operators with a private right of action. The Amateur Radio Emergency Preparedness Act of 2024 has been endorsed by the Amateur Radio Relay League (ARRL).

How about Canada?

While this Act is U.S. legislation, its principles could potentially be applied in Canada, where amateur radio operators also play a vital role in emergency communication. The Radio Amateurs of Canada (RAC) has established the Auxiliary Communications Service (ACS), which focuses on providing certified communications operators to supplement communications for local emergency management groups and non-government organizations.

The new RAC Auxiliary Communications Service (ACS) will assume the original function of the RAC Amateur Radio Emergency Service (RAC ARES), but its focus will shift to recognize that disaster response management and telecommunication standards are now mandated by Canadian federal, provincial and territorial legislation and regulations and by international agreements.

While the focus of non-government organizations will continue to be disaster relief operations, the role of the new RAC Auxiliary Communications Service will be to provide certified communications operators to supplement communications for local emergency management groups and non-government organizations and provide backup radio operators when required. ASC teams are in essence an integrated unpaid member of the sponsoring agency.

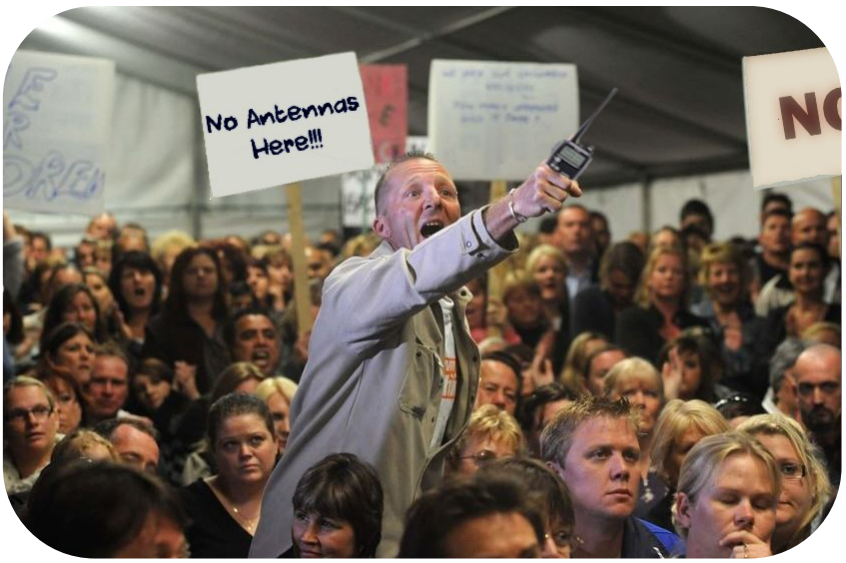
The RAC's role today is to facilitate trained Auxiliary Communicators, meeting a minimal standard across the country. These operators will be able to adapt to the obligations locally or if called to assist in other areas throughout their sections or the country.

The US Amateur Radio Emergency Preparedness Act is a significant step towards enhancing emergency communication in the U.S. If similar legislation were to be applied in Canada, it could potentially strengthen the role of amateur radio operators in emergency management, thereby contributing to public safety during times of crisis.

It would also enable our fellow amateur radio enthusiasts living in Strata developments to practice their hobby and develop their emergency preparedness skills, where in the past they have faced disabling restriction due to restrictive rules.

How about it… are you or your club willing to get your Member of Parliament onside?

~ John VE7TI



SARC SOCIETY DIRECTORS 2022-2023

PRESIDENT
Steve Mclean VE7SXM
president at ve7sar.net

VICE PRESIDENT
John Brodie VA7XB
vicepresident at ve7sar.net

SECRETARY / WEBMASTER
Jeremy Morse VE7TMY
secretary at ve7sar.net

TREASURER
Scott Hawrelak VE7HA
treasurer at ve7sar.net

DIRECTORS

Gord Kirk VE7GK
(SEPAR Liaison)
SEPAR @ ve7sar.net

Larry Bloom VE7LXB
New Ham Coordinator
GOTA @ ve7sar.net

John Schouten VE7TI
(SARC Publications/Blog/Social Media & Courses)
communicator at ve7sar.net
course at ve7sar.net

Stan Williams VA7NF

SARC MEMBERSHIP & CONTEST MANAGER
John Brodie VA7XB
membership at ve7sar.net

SARC QSL MANAGER
Shawn Dooley VE7BD

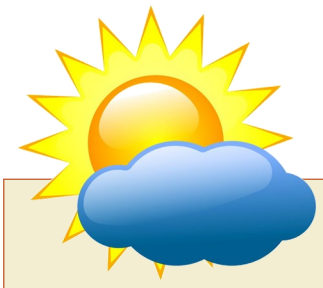
SARC REPEATER MANAGER
Horace Bong VA7XHB
repeater at ve7sar.net

SARC NET MANAGER
Reg Natarajan VA7ZEB
net at ve7sar.net

A look back...

From The Communicator—March 2014

Past Communicators are available at:
https://ve7sar.blogspot.com/search/label/SARC%20Communicator
or search the complete Communicator contents & index at:
SARCindex



Ahead to May and June

Another issue completed and we move to our May-June activities. We plan several linked dipole building workshops (weather permitting) and we hope to have some POTA activations.

Our meeting schedule is not yet finalized but the May meeting typically involves our annual Fox (hidden transmitter) Hunt. Of course June is our Annual General Meeting to wrap up the membership year.

Not long after that is the annual Field Day exercise, planning for which has already started.

SARC hosts an Amateur Radio net each Tuesday evening at 8 PM. Please tune in to the VE7RSC repeater at 147.360 MHz (+600 KHz) Tone=110.9, also accessible on IRLP node 1736 and Echolink node 496228.

On UHF we operate a repeater on 443.775MHz (+5Mhz) Tone=110.9 or IRLP Node 1737.

*We have a '**Get On The Air**' net directed at new hams on Thursday evenings at 8pm, on our 2m repeaters: North: 147.360MHz+ Tone=110.9Hz and South: 147.360MHz+ Tone=103.5Hz. Our SARC Elmers will be on hand to answer your questions.*

	SARC Net 20:00 Hrs
1st Tuesday Standby	Gary VA7GPR Reg VA7ZEB
2nd Tuesday Standby	Andrew VA7LGN Sheldon VA7XNL
3rd Tuesday Standby	Larry Bloom VE7LXB REG VA7ZEB
4th Tuesday Standby	Kapila VE7KGK John VA7XB
5th Tuesday Standby	Reg VA7ZEB John VE7TI
Want a turn at Net Control? Contact the SARC Net Manager	

Down The Log…

SARC Monthly Meetings

2nd Wed. (Sept-Jun)
1900 hrs at the Surrey Fire Service Training Centre, 14923 - 64 Avenue, Surrey, BC. Here is a what3words link and map: https://what3words.com/markers.addiction.ozone

Weekly SARC Social

Saturday between 0730 and 0930 hrs at the Denny's Restaurant, 6850 King George Blvd., Surrey BC

Workshops

Saturday between 1000 and Noon at the OTC 5756 142 Street, Surrey

SEPAR Net

Tuesday at 1930 hrs local on 147.360 MHz (+) Tone=110.9

SARC Net

Tuesday at 2000 hrs local on 147.360 MHz (+) Tone=110.9

VE7RSC Repeaters

2m North: 147.360MHz+ Tone=110.9Hz
IRLP node 1736
Echolink node 496228

2m South: 147.360MHz+ Tone=103.5Hz Fusion capable; No IRLP/EchoLink

1.2m: 223.960 Mhz -1.6 Tone=110.9Hz

70cm: 443.775MHz+ Tone= 110.9Hz
IRLP node 1737
WiRES-X Room ID 00047

The Canadian Amateur (TCA)

Canada's premiere national magazine devoted to Amateur Radio

TCA is published six times per year and is the membership journal of the Radio Amateurs of Canada (RAC). It is available in both print and digital versions (eTCA). Members of RAC, Canada's sole national Amateur Radio organization, receive TCA automatically. A subscription to TCA also provides membership in Radio Amateurs of Canada. RAC is also the publisher of TCA. For information on how to join Radio Amateurs of Canada and subscribe to TCA please visit our Membership Sign Up page.